

# Book of Abstracts of the International Student Congress – IBUISC 2025

Skopje, 24–26 November 2025

**The Future is Now: AI, Sustainability  
and Ethics in a Rapidly Evolving World**





# **ABSTRACT BOOK**



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# **The Future is Now: AI, Sustainability, and Ethics in a Rapidly Evolving World**

*Adon Grubi  
International Balkan University*

Artificial Intelligence is no longer a tool, it's a force that could help us humans to a better future, but at the same time it can be abused. With the rising usage of AI, while its exact figure is elusive, almost 2 billion people all around the world use Artificial Intelligence for their daily tasks and the number keeps rising. This pervasive integration of AI brings along many positives that help the human race in many different terms but along with that it also brings unintended consequences that are yet to be seen by the general public and its users.

This paper searches the confluence of AI, sustainability and ethics, arguing that the technological advancement alone is insufficient without an ethical guidance of the sort. In examining case studies of AI that have been used in environmental work, smart cities and resource optimization that focuses on efficiency, this research will show how AI can be leveraged to reduce ecological footprints and make a well being for humans. At the same time, it will highlight the dire importance of regulatory policies, transparency and accountability in showing the risks of misuse, data exploitation, ethical dilemmas and inequitable outcomes overall.

Ultimately, this paper mentions that AI is not inherently beneficial or harmful. Its impact will depend on the choices that societies make in using, designing, and governing these technologies. Ethical foresight, coupled with sustainability-oriented innovation is very important to make sure that AI contributes positively to global development rather than aggravating existing crises. Proving is by doing, I will offer a theoretical framework that will interweave the technological capability with moral responsibility. The goal of this study is to show to inform policymakers, technologists and the broader public on the exigent necessity for a judicial and balanced approach when dealing with AI integration in a rapidly evolving world.

**Keywords:** *Artificial Intelligence, Sustainability, Ethics, Responsible Innovation*

# **Ethical and Therapeutic Implications of Digital Therapists: The Risks of Replacing Human Clinicians with AI**

*Afranur Doğan*

*International Balkan University*

Mental health science has evolved over centuries from efforts to understand human behavior and mental processes, becoming an increasingly diverse discipline. The rapid integration of AI (Artificial Intelligence) into mental health services has been widely promoted as a solution to global psychological service shortages, and chatbots and digital therapists have been presented as affordable, accessible, and scalable alternatives to human clinicians. However, this article argues that the therapeutic use of AI carries significant ethical, clinical, and humanistic risks that fundamentally undermine the integrity of mental health practice. At the heart of this critique is the claim that psychotherapy is inherently relational, based on empathy, attunement, and the co-construction of meaning—qualities that AI cannot truly replicate. AI systems generate responses through probabilistic pattern recognition rather than emotional understanding, increasing the risk of dissonance, superficial validation, and harmful guidance, especially for vulnerable users.

Ethically, the use of AI in mental health services raises unresolved concerns about privacy, data exploitation, corporate control of sensitive psychological information, and the lack of clear accountability mechanisms for harm. Equally significant are the clinical risks: AI tools may fail to detect crisis situations such as suicidal ideation, domestic violence, or psychosis, may be triggers in many of these situations, and may also provide users with a false sense of security and competence. Furthermore, the emergence of emotional dependence on AI, particularly in individuals experiencing attachment trauma, raises the possibility of pseudo-therapeutic relationships that distort emotional expectations and delay interaction with professional human support. This could hinder individuals' ability to seek treatment and may also discourage them from seeking psychological support.

From a humanistic perspective, delegating emotional care to AI risks reducing mental health to a technical or computational problem and undermining the existential, cultural, and interpersonal dimensions of psychological suffering. Despite claims that AI improves accessibility, this article argues that safety, ethics, and relational authenticity must take precedence. Consequently, the integration of AI into therapeutic contexts must be approached with caution, and mental health care must remain fundamentally human-centered to preserve the dignity, complexity, and relational nature of recovery.

**Keywords:** *Artificial Intelligence, Mental Health, Ethics, Human-Centered Therapy*

# **AI – Driven Consumer Behavior & Ethical Digital Transformation in E – Commerce**

*Amela Jusufi  
International Balkan University,*

Given the rapid infiltration of Artificial Intelligence (AI) in e-commerce, consumer behavior, business models, and the whole ethical fabric of the digital marketplace have changed dramatically. This research is about the changes in consumer behavior caused by the usage of AI-driven tools such as recommendation systems, predictive analytics, and personalized advertising. These methods affect consumer decision-making, trust, and buying patterns. This study, by looking at the present state of AI implementation in the top e-commerce platforms, is inclined to find out the good sides of algorithmic personalization as well as the obstacles. The focus on the moral side of things like data collection, privacy, transparency, and digital manipulation is measuring how companies can promote responsible AI use while still gaining consumer trust. This research uses various methods to gather data from surveys and studies of major e-commerce platforms to evaluate consumer perceptions of fairness and control in AI-mediated shopping environments. The main objective is to present a model for the moral digital transformation that is in line with tech progress, consumer rights, and social responsibility.

**Keywords:** *Artificial Intelligence, E-commerce, Consumer Behavior, Ethical AI*

# **AI and Global Trade: Disruptions, Opportunities, and Ethical Dilemmas**

*Amera Muric  
International Balkan Unuversity*

Artificial Intelligence (AI) is changing the way countries produce, transport and sell good and services, making it an important influence in global trade. Traditional trade patterns are shifting as companies use AI to improve manufacturing, logistics and decision-making. This research investigates how AI is both an opportunity and disruption in international trade, including ethical issues that come with these changes.

One of the biggest issues discussed in this research is that the benefits of AI are not equally shared; developed countries and companies that have access to advanced technology and resources allow them to expand production and enhance market strength, while many underdeveloped and developing countries and companies have limited resources and difficulty adapting to technological change. These differences may expand the economic gap.

This research uses a qualitative approach based on research and real-world examples. It investigates how AI tools can reduce costs, predict market changes and support the growth of digital services. Job losses in labor-intensive industries is a one of the significant risks, as well as dependance on technology and ethical issues related to data ownership, privacy and fairness.

This research aims to provide an overview of how AI is transforming global trade, pointing the opportunities, challenges and risks it creates. It studies how business leaders can influence the implementation of AI to ensure the adoption supports fairness and sustainable growth. In addition, this research aims to present insights into how AI can be utilized responsibly by examining real-world examples.

**Keywords:** *Artificial intelligence, Global trade, Labor, Technology, Tairness*

# Smart Textiles and AI: Designing the Future of Sustainable and Ethical Fashion

Amra Hasičević

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This paper examines the critical convergence of smart textiles and artificial intelligence (AI) within the rapidly evolving context of sustainable and ethical fashion. Recognizing the fashion industry's mounting environmental pressures and social scrutiny, this study explores how integrating sensor-embedded fabrics and data-driven supply chain processes offers a potential paradigm shift. The approach synthesizes literature on sustainable fashion theory, circular economy models, and ethical technology design principles.

The analysis details the potential of this technological nexus to enable significant sustainability gains. AI enhances product durability through predictive maintenance and supports Product-as-a-Service (PaaS) models. It drastically reduces waste via precise demand forecasting and improves end-of-life recovery by enabling advanced sorting systems for complex fiber blends and integrated e-waste. Furthermore, AI-enhanced traceability systems, supported by technologies like Blockchain, offer radical transparency across the supply chain.

However, the paper rigorously discusses the critical regulatory and practical barriers to adoption. The most significant challenges concern data governance, privacy, and autonomy related to sensitive biometric data collected by garments, and the need to mitigate algorithmic bias in design systems. The paper also addresses the necessity of managing the integrated e-waste burden through principles like Design for Disassembly (DfD).

By proposing a comprehensive set of design principles for responsible integration and coordinated recommendations for key stakeholders, the paper argues that AI-enhanced smart textiles are foundational to achieving true circularity, provided they are combined with systemic policy changes, robust governance mechanisms, and thically-driven action across the global fashion ecosystem.

**Keywords:** *smart textiles, artificial intelligence, sustainable fashion, ethical design, circularity, data governance, e-waste, supply chain transparency.*

# Re-thinking Creativity and Identity in the Age of Artificial Intelligence

Amra Isein

International Balkan University

This paper explores how artificial intelligence is influencing the visual language of contemporary art and shapes what is called post-human aesthetics. Post-human aesthetics describe a shift in artistic creation wherein the human is no longer the only central creative force, but where creativity emerges through the interaction between human intention and computational systems. The development challenges traditional ideas on artistic skills, authorship, and originality.

Artificial intelligence tools, such as generative models and algorithmic image systems, allow artists to collaborate with technology in ways that were not possible before. In this collaboration, the artist leads the process of choosing inputs, adjusting parameters, and curating the final outcomes. The machine acts not so much as a passive tool but rather an active participant who can propose forms, patterns, and visual solutions beyond human habits or expectations. Because of this, the visual language of artworks created with AI becomes more fluid, hybrid, and experimental. It often mixes digital and physical imagery, realism and abstraction, and familiar styles with completely new, synthetic textures.

To summarize these new creative processes, throw up significant questions about identity and authorship. If the artwork is shaped by both humans and machines, who is considered the creator? The emergence of post-human aesthetics would suggest that creativity might be shared and distributed rather than being tied to a single individual. Overall, AI does not replace human creativity but extends it, offering new artistic possibilities and changing the way in which we understand visual culture in the contemporary world.

**Keywords:** *Artificial Intelligence, Post-Human Aesthetics, Visual Culture, Generative Art*

# Scaffolding for Inclusion in Multi-Level EFL Classrooms: A Sociocultural Perspective

Anda Aziri

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Inclusive education has become a defining feature of modern pedagogy, yet its implementation remains challenging in English as a Foreign Language (EFL) contexts, particularly in classrooms that are culturally homogeneous but diverse in ability. While global research often emphasizes inclusion in multilingual or multicultural settings, far less attention has been given to countries where linguistic diversity is limited but ability differences are significant. This study addresses that gap by investigating how scaffolding can promote inclusion in multi-level EFL classrooms in North Macedonia, framed through Vygotsky's Sociocultural Theory (SCT). Teachers in North Macedonia work in conditions marked by large, mixed-ability groups, strict national curricula, and limited professional autonomy. These systemic factors constrain teachers' ability to differentiate instruction, even when they recognize the importance of inclusive practices. Drawing on Vygotsky's Zone of Proximal Development (ZPD), scaffolding is conceptualized in this study as a dynamic, interactive process in which teachers provide temporary, adaptable support to help learners progress beyond their current level of independent performance. Although scaffolding is widely acknowledged as an effective strategy, little is known about how EFL teachers in this specific context interpret, adapt, and operationalize it within institutional constraints. This research explores teachers' perceptions and classroom practices related to scaffolding through a mixed-methods approach, combining structured interviews with classroom observations. Such an approach allows for an in-depth analysis of both teachers' theoretical understanding and their real-time instructional decisions. The study examines the extent to which teachers modify tasks, adjust interaction patterns, and employ peer collaboration to support students at different proficiency levels. By illustrating how sociocultural concepts function in real classroom environments, the research contributes to ongoing discussions about inclusive EFL pedagogy in under-researched national contexts. The findings aim to offer practical insights for teachers, school administrators, and policy-makers by identifying feasible scaffolding strategies that promote learner engagement, autonomy, and equitable participation despite structural limitations. Ultimately, this study seeks to demonstrate that inclusive education in North Macedonia can be strengthened not only through policy reforms but also through adaptable, context-sensitive classroom practices rooted in SCT.

**Keywords:** *inclusive education, scaffolding, sociocultural theory, English as a Foreign Language (EFL), learner diversity, Vygotsky's Sociocultural Theory, language learning inclusion.*

# AI in Writing Pharmaceutical Recipes: Pharmacists' Perceptions

Andi Xhaferi  
University of Innsbruck

The recent technology development, Artificial Intelligence (AI), is rapidly transforming healthcare and pharmacy practice by providing innovative tools that support drug formulation, prescription writing, and patient counseling. Within the pharmaceutical field, AI is increasingly applied to complete different tasks including: dosage optimization, automated compounding instructions, and error reduction in recipe writing. However, little is known about how community pharmacists perceive the integration of AI into their daily routines. Therefore, this study aims to explore both the practical adoption of AI tools and the ethical concerns surrounding pharmacists' use in patient-centered pharmacy practice in North Macedonia. The study is based on the Technology Acceptance Model (TAM) framework, which emphasizes perceived usefulness and acceptance of technology, as well as the trust-driven and empathetic aspects of pharmacist-patient relationships, especially in contexts where AI tools impact clinical decision-making. In fact the TAM framework helps researchers and policymakers understand what drives or hinders pharmacists' adoption of such technologies. The research is conducted in community pharmacy settings across leading chains in North Macedonia such as: Zegin, Europharm, Viola, Betty and Lifeline pharmacies. A mixed-methods approach is employed including a structured questionnaire with 12 items administered to pharmacists on their awareness, perceived benefits, concerns, and readiness to adopt AI in recipe writing and routine practice. Secondly, semi-structured interviews with a smaller sample providing insights into ethical concerns: transparency, professional accountability, and patient trust.

The study aims to answer three key research questions: (1) How do pharmacists in North Macedonia perceive the role of AI in writing pharmaceutical recipes and supporting daily tasks? (2) What are the main perceived advantages and barriers to adopting AI tools in pharmacy practice? (3) What ethical concerns do pharmacists raise regarding patient safety, confidentiality, and professional responsibility when AI is integrated into pharmaceutical services?

The findings of this study will greatly contribute to a deeper understanding of pharmacists' attitudes toward AI and to provide recommendations for responsible implementation in community pharmacy practice.

**Keywords:** *AI, pharmacists' attitudes, Technology Acceptance Model (TAM), Pharmaceutical Recipes*

# Posthuman Aesthetics: The Impact of Artificial Intelligence on Visual Language

Andrea Kovačević

*International Business-Information Academy*

In a world where the boundaries between humans and machines are becoming increasingly blurred, artificial intelligence is no longer just a sophisticated tool—it is emerging as an active agent in shaping visual culture. This paper explores how AI is transforming the way we understand and experience visual language, particularly within the fields of art and design. The focus is on the concept of posthuman aesthetics, an idea that challenges us to rethink traditional notions of authorship, creative intent, and emotion in an era where images are generated not by humans, but by algorithms. Drawing on theories of posthumanism (Rosi Braidotti, Donna Haraway), digital media aesthetics (Lev Manovich), and classical aesthetic thought (Kant, Benjamin), this study aims to situate AI-generated visuals within today's broader cultural landscape. Though created without memory, conscious emotion, or lived experience, artworks produced by tools like Midjourney, DALL-E, and Artbreeder often provoke surprisingly strong emotional and aesthetic responses. What does that say about our perception of art? By comparing AI-generated images to those made by human artists, the analysis focuses on shifts in composition, symbolism, and audience reception. It also explores how our understanding of authorship is being redefined in this hybrid space where humans and machines co-create. Can machine-made art be considered authentic? And if so—by what standards? Ultimately, this paper argues that AI is not simply generating new aesthetic forms; it is also pushing the boundaries of how we define creativity itself. Rather than replacing human imagination, AI invites us to rethink what it means to create, to feel, and to interpret art in the age of intelligent machines.

**Keywords:** *Artificial Intelligence, Visual Culture, Posthuman Aesthetics, Digital Art*

# How AI's Ethical Betrayal is Closing Companies' Doors to Growth: AI's Opportunity Cost Debt (OCD) in Supply Chain Governance

*Ayşe Isil İlhan*

Integrating Artificial Intelligence into supply chain management improves operational efficiency but also introduces tension between AI autonomy and accountability. While traditional AI ethics addresses responsibility to society and individuals, this study examines a different issue: AI's potential to cause ethical and strategic harm to the company that implements it. This harm, defined as Opportunity Cost Debt, results from AI's risk-averse, data-driven decisions that limit innovation and growth.

This paper examines how AI's exclusive focus on cost optimization undermines the company's long-term strategy by excluding high-risk, yet ethical and innovative, suppliers. This approach is both a strategic error and an ethical issue, as it may distance the company from its core values and legal obligations.

While conventional ethical discussions center on AI's obligations to society and individuals, this paper addresses Opportunity Cost Debt (OCD) as a form of corporate self-discipline. We contend that AI's cautious classifier methodology, which inadvertently dismisses new, innovative, and ethically superior suppliers due to a lack of data, results in a crucial strategic imbalance that jeopardizes the company's long-term goals and heightens both legal compliance risks and reputational harm. Thus, the scope of AI's ethical challenges should be broadened to encompass its responsibilities to the organization it supports.

This research offers a theoretical and practical framework for converting OCD from a conceptual idea into a manageable risk. Assessing OCD involves monitoring the market performance of potential suppliers deemed unfit by AI through shadow accounting techniques. To mitigate this issue, a Hybrid Decision-Making Framework has been created, which balances OCD by incorporating forward-looking strategic indicators such as Innovation Weight and Ethical Compliance Scores into the AI's objective function, while also requiring Explainable AI (XAI) and Human-in-the-Loop (HIL) processes for critical decisions.

Findings indicate that this governance model, designed to safeguard AI systems from OCD, not only assists companies in avoiding legal repercussions but also prevents the risk of strategic failure caused by AI, thereby maintaining long-term strategic value and ethical integrity in favor of short-term gains.

**Keywords:** *Artificial Intelligence, Supply Chain Management, Ethical Risk, Opportunity Cost Debt*

# **The Ethical Implications of AI in Language Learning and Mental Health Support**

*Beril Alkan*

*Bursa Uludag University*

The rapid advancement of Artificial Intelligence (AI) has significantly transformed the fields of education, communication, and mental health support. AI-powered language learning tools have introduced new possibilities for personalized and efficient education. Adaptive learning platforms use data-driven algorithms to analyze learners' progress, identify individual needs, and tailor content accordingly, offering a more engaging and flexible learning experience. Similarly, chatbots equipped with natural language processing (NLP) capabilities have become valuable tools for language practice, feedback, and emotional support. The integration of text, video, and AI-generated materials enhances multimodal learning environments, yet it also raises questions about responsible use, accuracy, and the potential for misinformation.

Beyond education, AI technologies have increasingly entered therapeutic and counseling contexts. AI-mediated therapy and tele-counseling platforms now enable clients to access support regardless of location or time constraints. However, the use of AI in such sensitive areas demands careful ethical consideration. Issues such as informed consent, bias in AI algorithms, and the potential loss of human empathy are central to ongoing debates about the limits of AI involvement in mental health care. Confidentiality and data security are especially critical, as AI systems often collect, store, and analyze large volumes of personal and emotional data. Ensuring the protection of users' privacy and maintaining strict data governance are essential to building trust and preventing misuse.

In conclusion, while AI-powered tools hold great promise in enhancing learning and mental health services, they must be developed and applied responsibly. Ethical frameworks should guide their design and implementation to balance innovation with human values. The future of AI in language learning and therapy depends not only on technological progress but also on a strong commitment to transparency, accountability, and the protection of user rights.

**Keywords:** *Artificial Intelligence, Language Learning, Mental Health, Ethical Frameworks*

# Exploring AI, Sustainability & Ethics

*Berna Sevimli*

*International Balkan University*

This study examines how artificial intelligence, sustainability, and ethics shape our modern world. In this rapidly changing world, technology not only transforms industries and production but also forces humanity to find a balance between innovation and ethical responsibility. I would also like to share my own ideas in this field.

Among the destructive and constructive technologies of digital transformation, artificial intelligence ranks first and is becoming more important every day. While people benefit from the advantages of AI, they have also started to feel fear, because this artificial intelligence has begun to perform tasks that human power can do. Therefore, people have started to fear losing their jobs. Another important factor in the development of artificial intelligence is globalization. Globalization started with the Industrial Revolution and continues to develop today, and AI is included in this process as well. AI has not only developed in the industrial field but has also led to great innovations in the field of health. It has played a very important role in the diagnosis and treatment of diseases. However, according to recent studies, it has been discussed that artificial intelligence may experience hallucinations, and on the other hand, it has been shown that it can make biased decisions regarding gender, race, etc. This is an example showing that artificial intelligence does not always develop positively. AI also has many studies and applications in the field of sustainability. For example, the use of artificial intelligence by companies gains great importance here. Companies can easily optimize their management, resources, and distribution processes by focusing on efficiency and using AI to reduce wasted energy and data. This becomes highly valuable both for company profits and for being eco-friendly.

Considering all these studies, it has shown us that AI can leave many marks on environmental and ethical values and cause changes, whether good or bad. It has many useful as well as harmful aspects for ethics and sustainability.

**Keywords:** *Artificial Intelligence; Sustainability; Ethics; Digital Transformation*

# Between Human and Machine: Ethics, Creativity and the Digital Frontier

Berta Milevska

*International Balkan University*

A few years have passed since humankind's newest technological landmark. People have been longing for it since the earliest days of science fiction films. "Artificial Intelligence" is a term first heard in the middle of the last century, and now it's on the rise. You can hear it around every corner of your life. It's slowly, or not so slowly, taking over, implementing itself everywhere. You can find it on your phone, your TV; some people even say that soon you'll find it sitting in your chair at work, and you'll no longer be needed. A lot of science fiction movies, from this century and the previous one, have been talking about AI for a while now. Today's AI, however, isn't quite like the ones described in those films. It's not a killer robot, or a consciousness determined to enslave humanity. This one comes with different questions and concerns, mostly moral and ethical ones.

In 2023, AI's arrival was impossible to ignore, causing Hollywood's writers and actors to think twice before signing a contract or submitting their work. AI shocked the world with how easy creation had become, you just needed to nudge it a little. Images began generating everywhere. Not yet perfect, but highly realistic videos were circling the internet and social media: five-legged cats and terrifyingly convincing "deepfakes" of your favorite actors. Animators and filmmakers screamed around the corner, scared of losing their jobs. This was the moment when people began questioning the moral background of using this new technology to pass in a cheaper, faster way. Screenwriters were neglected as the boundaries of copyright grew unclear. Actors faced the unsettling reality that, with one click, their faces could be duplicated, aged, or altered, and all this without the need for endless hours in the visual effects department. Before people knew it, AI had embedded itself into every field, firmly taking its place within the filmmaking process. The border between imagination and simulation has never been smaller. As AI is practicing and growing its skills in all the different artistic fields, we find ourselves generated somewhere in its images. We have not been replaced, only reinterpreted, our roles - questionable. Cinema represents a gateway to our dreams, a door for escaping mundane life. Right now it's an ongoing dialogue between human and machine. This study looks into their conversations, asking if the stories we tell with AI still belong to us, or if the science fiction times have finally caught up to us, a synthetic reality built with humankind's fears and fascination of AI.

**Keywords:** *Artificial Intelligence, Filmmaking, Ethics, Digital Culture*

# **Globalization, Social Media, and Mental Health: A Double-Edged Sword?**

*Besa Nuedini*

*South East European University*

This research paper explores the complex and dual nature of social media's impact on mental health within the broader context of globalization. Grounded in interdisciplinary literature and comparative studies from Norway, Sweden, and North Macedonia, the study investigates how digital connectivity, shaped by global forces, serves both as a tool for well-being and a risk factor for psychological distress. Drawing on theoretical frameworks such as Social Comparison Theory, Ecological Systems Theory, and Uses and Gratifications Theory, the paper examines the paradoxes of modern digital life; how platforms intended to foster support, creativity, and connection can also intensify anxiety, depression, and emotional detachment. Globalization is examined not only as an economic and political phenomenon but as a cultural force that reshapes identities, relationships, and health outcomes. While globalization enhances access to mental health resources and cross-cultural dialogue, it also brings systemic pressures, urban stress, and sociocultural disruptions that can worsen mental health, particularly in low- and middle-income countries. In this context, social media becomes a microcosm of globalization: algorithm-driven, emotionally immersive, and socially indispensable, yet also deeply addictive, comparative, and at times, alienating. Empirical findings from the North Macedonian HBSC study (2022) reveal how problematic social media use is shaped by gender, ethnic background, family support, and school satisfaction. Norwegian and Swedish case studies further show that while social media fulfills adolescents' needs for connection and self-expression, it can also aggravate stress, sleep disturbances, and social exclusion. The role of platform algorithms is critically assessed, revealing how they reinforce emotional vulnerabilities through curated content and behavioral manipulation.

The study concludes that social media's mental health impacts are not inherently positive or negative but depend on usage patterns, individual resilience, cultural context, and the strength of offline support systems. Addressing this double-edged reality requires digital literacy, family-centered interventions, culturally responsive mental health strategies, and ethically designed platforms. In an age of accelerated globalization, the challenge is not to reject social media but to navigate its complexities with awareness, care, and balance.

**Keywords:** *Globalization, Social Media, Mental Health, Adolescents, Digital Well-being*

# **Synthetic Realities: The Ethics of AI in Filmmaking and Visual Storytelling**

*Burim Saiti*  
*International Balkan University*

Artificial intelligence is transforming modern filmmaking by changing how movies are written, edited, and visually produced. It allows filmmakers to create realistic effects, virtual actors, and even entire scenes that would be impossible or expensive to film in real life. While these tools open new creative opportunities, they also raise serious ethical questions about authenticity, ownership, and trust. When AI creates lifelike images or characters, it becomes difficult to know what is real, and this can affect how audiences understand and believe what they see on screen.

This abstract explores the moral challenges that arise when technology becomes part of artistic creation. It questions who should be recognized as the true creator of a film that uses AI-generated content. Another important issue is consent, since many AI systems are trained on existing materials that might include the faces, voices, or creative work of real people without permission. Such practices can harm both the reputation and rights of the individuals involved.

The use of AI in cinema also brings concerns about misinformation and manipulation. Deepfake videos, for example, can spread false stories or misrepresent real people. To avoid these problems, filmmakers and studios should develop clear ethical standards for using AI. They need to ensure transparency about how artificial content is produced and maintain honesty toward the audience. AI should be viewed as a tool that supports human creativity rather than replaces it. Ethical and responsible use of these technologies can help preserve the integrity of storytelling while embracing innovation in the film industry.

**Keywords:** *Artificial Intelligence, Filmmaking, Ethics, Deepfakes*

# Digital Colonialism or Development? AI's role in global Economic Equity

Charles Zimunhu  
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This paper critically assesses and interrogates the dual role of Artificial intelligence in molding and the Global economic equity; AI is a double-edged sword in shaping the Global economic field. With the introduction of such a powerful agent or element in the great mix, it brings upon the question of whether it drives a new form of global colonialism or offers a pathway to a meaningful development. Leaning heavily on postcolonial theory, dependency theory, critical data studies and other major economic theories, the paper explores in detail how AI technologies preeminently developed and, in a way, governed by the Global North, may reinforce inequality, historical patterns of extraction and the amount of technological dependence in the Global South. At the same time, it examines the circumstances under which Artificial Intelligence can be utilized to bring upon inclusive development and forge economic empowerment.

The research encompasses a comparative analytical framework, keeping much focus on three intertwined domains that include (1) Data collection and ownership; mainly how raw data extracted from the Global South fuels the North and its AI systems ; (2) AI infrastructure and labor; this includes the outsourcing of data and content moderation to low-income regions (3) Governance and regulation; assessing how imbalances in policy capacity and digital sovereignty affect local control over AI deployment.

Case studies include the AI-driven agricultural initiatives in the sub-Saharan Africa, regulatory challenges faced by countries attempting to get control over multi-national corporations and labor dynamics in the Southeast Asian AI supply chains. These examples bring to light how AI can either reproduce colonial logistics or bring in development. This all depends on the power, resources, and decision-making authority, which is further assessed in the research. The paper argues that the AIs impact is not neutral but immensely rests on global power structures and local agency. To prevent the consolidation of a new digital empire, a decolonial AI agenda is necessary centered on fair data governance, participatory design and technological sovereignty. Such an approach is critical and essential for transforming AI from Global asymmetry to equitable development.

**Keywords:** *Artificial Intelligence, Global economic equity, Decolonial AI, Data governance*

# Artificial Intelligence and Sustainable Economic Growth

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The creation of Artificial Intelligence, and its rapid improvement, is re-shaping the modern world, its improving production systems, offering also new opportunities for advancing sustainability goals. Even though AI can help improve sustainability, due to creating more efficient processes, there are concerns that AI can also harm sustainability due to the large amount of energy consumption and CO<sub>2</sub> emissions because of it. Even though studies recognize it as a driver of Sustainable Economic Growth, its impact depends on the scale of deployment, sectoral context and governance mechanisms. Some studies show that AI Innovation can reduce CO<sub>2</sub> emissions, when paired with environmental safeguards, while unchecked economic growth, energy consumption and foreign direct investment can increase CO<sub>2</sub> emissions.

By integrating economic and technological indicators, this research tends to explore how AI contributes to resource efficiency and economic resilience. The key indicators that will be analyzed and used in this study include SDG index as dependent variable, while AI adoption index, digitalization indicators, human capital, foreign direct investment and energy consumption as independent and control variables. The study intends to assess if AI adoption promotes sustainable economic growth and to what extent by analyzing and comparing two different types of countries, the EU countries and the Western Balkan Countries. The findings are expected to provide evidence on the role of AI as a driver of sustainable development and be used to offer recommendations for aligning digital innovation and transformation with sustainable development goals.

**Keywords:** *SDG, growth, AI, CO<sub>2</sub>*

# Digital Colonialism or Development? AI's role in global Economic Equity

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Artificial Intelligence is reshaping our whole reality and the world as we know it, including the public administration and the democratic governance. AI is believed to be able to improve transparency, efficiency, and anti-corruption efforts, but it also brings significant worries regarding sustainability, accountability, legitimacy, and human control.

This paper explores these claims via a concentrated case study of Albania, where in 2025, an AI minister named Diella was created to manage public procurement and to promote transparency and anti-corruption.

Comparing policy analysis and media reports this research aims to explore those claims and the way it transforms our beliefs on modern democracy. It also explores the regulatory framework of the EU and the EU AI Act.

The paper contends that the Albanian case exemplifies the potential benefits and risks of algorithmic governance: AI can identify inefficiencies and lower corruption risks, but without robust institutional protections, it could jeopardize democratic oversight. The results indicate that future democratic leadership relies on creating legal, ethical, and participatory structures that guarantee AI functions as a means of accountability—rather than a substitute for it.

**Keywords:** *Artificial Intelligence, Public Administration, Democratic Governance, Algorithmic Transparency*

# **AI Readiness, Fiscal Discipline, and the Current Account: Evidence from a Cross-Country Analysis**

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This paper examines the impact of artificial intelligence preparedness on the current account balance across a sample of 11 countries. Using a linear regression analysis, the study models the current account as a function of AI preparedness, government revenue, and net lending. The results indicate that while the model is statistically significant, only government net lending shows a significant positive effect on the current account. On the contrary, AI preparedness is negative and statistically insignificant, suggesting that AI may initially damage external balances, on the long term it has the potential to strengthen trade competitiveness and productivity. The study shows the importance of aligning fiscal discipline and technological strategies to ensure that the benefits of AI preparedness help for sustainable macroeconomic stability.

**Keywords:** *Artificial Intelligence, Current Account Balance, Macroeconomic Stability, AI Preparedness*

# **From Screens to Skills: Integrating AI, Ethics, and Sustainability in English Learning through Movies and TV Shows**

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*Uludağ University*

In the era of digital globalization, the integration of movies, TV series, and artificial intelligence (AI) tools has changed English language learning into a more dynamic, accessible, and personalized experience. This study examines university students' perceptions of the pedagogical effectiveness and ethical implications of using audiovisual materials and AI-supported technologies in developing key language skills—particularly listening, vocabulary, and speaking. A structured questionnaire was administered to 100 participants representing diverse academic fields and proficiency levels. The research investigates viewing habits, subtitle preferences, motivational impacts, and the perceived sustainability of technology-enhanced learning environments. Findings show that students view audiovisual and AI-assisted materials as highly effective in improving language competence and motivation, with listening identified as the most enhanced skill. However, concerns emerged regarding ethical use, data privacy, and overreliance on automated systems. The study emphasizes the importance of integrating AI responsibly within educational frameworks to ensure equitable access, academic integrity, and long-term sustainability. Overall, the results highlight the need for a balanced, ethically informed, and learner-centered approach to incorporating AI and audiovisual media in English language education.

**Keywords:** *English language learning, audiovisual materials, AI in education, ethics and sustainability, responsible use.*

# **Abstract: Ethical Decision-Making in AI-Powered Supply Chains**

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The rapid integration of Artificial Intelligence (AI) into global supply chains is transforming how firms forecast demand, allocate resources, manage logistics, and evaluate risk. While systems promise substantial efficiency gains, they also introduce complex ethical challenges that demand careful scrutiny.

This document examines the ethical dimensions of AI-powered supply chains, focusing on transparency, fairness, accountability, privacy, and sustainability. As algorithmic design-making automates procurement, routing, and supplier evaluation, opaque model logic can obscure biases that disadvantage certain vendors, regions, or labor groups.

Additionally, the large-scale data aggregation required for AI optimization raises concerns about surveillance, data ownership, and the potential misuse of commercially sensitive or personally identifiable information. Ethical risks also emerge in labor displacement and in environmental trade-offs when AI systems prioritize cost and speed over long-term sustainability.

Through an interdisciplinary lens, this study analyzes current industry practices, highlights common ethical failure points, and outlines governance frameworks, including algorithmic auditing, human-in-the-loop oversight, responsive data stewardship, and value-aligned objective setting, to ensure equitable and trustworthy AI deployment.

The paper argues that ethical decision-making must be embedded throughout the lifecycle of AI systems to create resilient, transparent, and sociability-responsible supply chains capable of meeting both economic and societal goals.

**Keywords:** *Artificial Intelligence, Supply Chains, Ethics, Data Governance*

# AI and Global Trade: Disruptions, Opportunities, and Ethical Dilemmas

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Artificial Intelligence (AI) is consistently proving to play a crucial role in numerous aspects through its transformative potential. Regarding international trade, its most efficient and productive uses have exhibited efficiency and productivity in improving overall economic efficacy, market competitiveness, rational decision-making, and optimizing trade operations generally. Furthermore, it is sufficiently leading to alleviating regulatory compliance, strengthening supply chains, advanced machine learning, automation, large-scale data analysis, employment of predictive analytics for enhanced demand forecasting, and altogether contributing to improved logistics and inventory management.

Notwithstanding, when it comes to the imposed threats of AI, the global economic field is facing ethical dilemmas and moral implications in various contexts, including risks associated with personal data security and significant displacement of the human labor force, along with other corresponding challenges and drawbacks. There is a continuous pattern shown in mismatches between developed and developing countries, seemingly due to the biased outcomes of algorithmic programs in different economic scenarios implemented with the aim of easing automatic processes, which prove to raise concern and seek attention to catering to such phenomena by offering integrated resolution mechanisms. Most recent undertakings dedicated to addressing these ethical dilemmas and complexities show commitment through measures of data governance frameworks, instituting further enhancement by policymakers and encouraging regulatory coordination across both domestic and international landscapes.

It is vital to highlight the utmost importance and difference that AI has offered in recent years, particularly in the sector of businesses and its stakeholders, although, as automation and AI continue to evolve, labor markets will inevitably experience significant shifts affecting the participants. Companies striving to stay competitive internationally will depend more heavily on automation to boost efficiency. The challenge, however, lies in the possibility that businesses may chase short-term financial advancements without properly considering the broader long-term effects on international and global trade and economy.

**Keywords:** *Artificial Intelligence (AI), International Trade, Automation, Data Governance, Algorithmic Bias.*

# **Artificial Intelligence for Inclusive Accessibility: A Comprehensive Study on AI Applications Empowering People with Visual, Auditory, Motor, and Cognitive Disabilities**

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*International Balkan University*

Accessibility continues to be one of the most pressing challenges of the digital era, as millions of disabled individuals face barriers in communication and interaction with technology. Recent advances of Artificial Intelligence (AI) field are presenting unforeseen opportunities to overcome these challenges and close the existing accessibility gap. This paper aims to explore and display how diverse AI techniques like spanning computer vision, natural language processing, speech recognition, and adaptive interface design can enhance inclusivity for users with visual, auditory, motor, and cognitive impairments. Through an extensive research and comprehensive analysis of the existing systems and technologies, the study highlights the impact of key applications such as real-time scene description for the visually impaired, sign language translation for the hearing impaired, voice-enabled control for motor disabilities, and intelligent text simplification for cognitive challenges. In addition to the mentioned technologies the paper discusses the current limitations, including dataset bias, personalization constraints, and ethical considerations surrounding privacy and autonomy of its users.

Finally with this paper we propose an AI accessibility framework that integrates and combines all of the above-mentioned technologies into one unified model that is suitable for deployment in every environment of the digital field. By emphasizing both technological improvements and human-centered design, this study aims to contribute to the development of a better and more efficient intelligent systems that will empower individuals that have disabilities to participate and rise in the digital and professional world.

**Keywords:** *Artificial Intelligence, Accessibility, Assistive Technology, Computer Vision, Speech Recognition, Natural Language Processing, Human-Computer Interaction*

# **AI-Driven Ethical Visual Communication: Designing Responsible Futures in the Age of Generative Technologies**

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*International Balkan University*

Artificial intelligence has rapidly reshaped the field of visual communication, introducing new creative possibilities while simultaneously raising profound ethical questions regarding authorship, transparency, sustainability, and societal impact. This study explores the role of AI-enabled design tools within contemporary digital art practices, examining how designers can adopt ethical-by-design principles to ensure responsible visual production in an increasingly automated environment. Drawing on interdisciplinary insights from art theory, AI ethics, and sustainable design frameworks, the paper investigates the emerging challenges surrounding data bias, originality, ecological footprint, and the shifting relationship between human creativity and machine-generated outputs. The analysis highlights the importance of developing transparent creative workflows, implementing sustainable digital practices, and fostering critical visual literacy among both designers and audiences. Furthermore, the study proposes a conceptual model for ethical AI-assisted design, emphasizing accountability, inclusivity, and environmental awareness as foundational elements of future visual communication. By situating AI within broader ethical and ecological contexts, this research aims to support a more conscious integration of machine intelligence in artistic production. Ultimately, the findings contribute to ongoing academic discussions about how design education and industry practices can evolve to navigate the opportunities and risks of AI-driven creativity, advocating for a future in which technology enhances—not replaces—the human capacity for meaningful, sustainable, and morally grounded visual expression.

**Keywords:** *Artificial Intelligence, Visual Communication, Ethical Design, Sustainable Creativity*

# Democracy in the Age of Artificial Intelligence: Balancing Innovation and Integrity

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Artificial Intelligence is increasingly shaping democratic governance, offering both opportunities and challenges for policymakers and citizens alike. While AI has the potential to improve transparency and facilitate citizen engagement, its rapid adoption in electoral processes, policy-making and administrative tasks can also pose risks to democratic integrity. For example, the OECD has highlighted how AI tools can enhance government transparency and data accessibility, making information more readily available to the public.

However, the rise of AI-generated misinformation and automated content manipulation presents significant threats. According to the *Journal of Democracy*, generative AI may undermine representation, accountability and public trust if used unethically. Similarly, the Brennan Center for Justice emphasizes the importance of protective measures against the misuse of AI in shaping public opinion and policy decisions. To address these challenges, ethical guidelines, regulatory policies and public awareness initiatives are essential. The UN has established a panel to examine AI's implications for governance and to propose strategies for responsible adoption. Implementing these measures can ensure that AI contributes positively to democratic processes while minimizing potential harms.

In conclusion, AI holds promise as a tool to strengthen democratic governance but must be applied thoughtfully. Balancing innovation with ethical oversight and citizen involvement is crucial to safeguard democratic principles and enhance public trust. By carefully integrating AI into governance frameworks, societies can leverage technological advancements while maintaining accountability, fairness and transparency.

**Keywords:** *Artificial intelligence, Democratic Governance, Transparency, Misinformation, Ethics*

# **A Sustainable Factory for a Sustainable City**

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The global pursuit of sustainability has transformed the way cities and industries are conceptualized, designed, and operated. As urban populations expand and industrial activity intensifies, the demand for resources and energy continues to grow, often at the expense of environmental integrity. This paper advances the concept of “A Sustainable Factory for a Sustainable City” as a holistic framework that integrates sustainable industrial practices within the broader goals of urban resilience and ecological balance. It explores how the sustainable factory, defined as a production system that minimizes waste, optimizes resource efficiency, and employs clean technologies, can become a fundamental component of the sustainable city of the future.

The study emphasizes the mutual interdependence between industrial infrastructure and urban environments. Sustainable factories can serve as nodes of innovation within cities by adopting circular-economy principles, renewable energy systems, closed-loop supply chains, and logistics improvements. These factories not only reduce carbon emissions and pollution but also contribute to social and economic sustainability by generating green jobs, fostering local economies, and promoting equitable development. Moreover, integrating such factories into urban planning frameworks enables cities to enhance their resilience to climate change and ensure long-term livability. Through a multidisciplinary approach that combines industrial ecology, urban design, and environmental policy, this paper analyzes successful case studies and identifies key strategies for implementation. It argues that the transformation of traditional factories into sustainable production ecosystems requires a paradigm shift, from linear models of consumption and waste to regenerative systems that coexist harmoniously with urban life, and that sustainability is one of the core innovations of Industry 5.0.

Ultimately, the paper positions the sustainable factory as both a symbol and a catalyst for the sustainable city. It concludes that the synergy between sustainable production and urban development can redefine the trajectory of modern civilization, aligning technological advancement with ecological responsibility, economic prosperity, and social inclusion. This integrated vision offers a roadmap toward a future where industry and city evolve together in balance with the planet’s natural systems.

**Keywords:** *Sustainable Factory, Sustainable City, Circular Economy, Urban Resilience*

# Chatbots in Mental Health Support: What We Know, What We Risk, and What Comes Next

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**Background:** The rising global demand for mental health care, coupled with a shortage of qualified clinicians, has encouraged the emergence of artificial intelligence (AI) chatbots as accessible and affordable tools for psychological support. These systems promise to lower barriers to care and reduce stigma, yet their true clinical value, ethical reliability, and sustainable role within mental health services remain open to debate.

**Objective:** This mini-review brings together recent empirical and conceptual work published between 2017 and 2025 on AI-based chatbots in mental health care, with the aim of summarizing current evidence on their therapeutic potential, examining key ethical challenges, and outlining possible paths for future development.

**Methods:** A narrative review of studies published between 2017 and 2025 was conducted through PubMed, Scopus, and Web of Science. Ten key papers on AI chatbots such as Woebot, Wysa, and LLM-based systems were examined for their design, outcomes, and ethical implications.

**Results:** Across randomized and observational studies, AI chatbots have shown modest short-term reductions in depression and anxiety, along with higher user engagement compared with self-help controls. Meta-analyses suggest their greatest value lies in mild to moderate cases, while qualitative research highlights users' sense of empathy and companionship but also confusion between a therapeutic tool and a perceived "friend." Ethical reviews raise persistent concerns around privacy, consent, bias, emotional simulation, and accountability. More recent evaluations of large language model (LLM) chatbots indicate potential for cognitive-behavioral use, yet warn of risks such as misinterpretation, overreliance, and emotional dependence.

**Conclusions:** AI chatbots offer promising support for early screening and psychoeducation, particularly in settings with limited mental health resources. Yet they remain no substitute for human empathy or professional judgment. Future development should emphasize clinician-guided hybrid models, ethical design principles, and long-term safety evaluation.

**Keywords:** *artificial intelligence, chatbots, digital mental health, ethics, cognitive behavioral therapy, large language models*

# AI and Workplace: Psychological Impacts on Employee Well-being and Work Motivation

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*International Balkan University*

Nowadays, it is undebatable that all the workplaces use technology in their every unit. Since technology is evolving day to day, workplaces also try to catch up with the changes and implement those changes in their working areas, in the communication channels, and they also use these changes on enhance positive concepts of the work such as satisfaction, employee well-being, work engagement and work motivation. Especially with the huge innovation of Artificial Intelligence, psychologists try to use it to increase the positivity of the workplace by enforcing it in motivation (especially in Self-determination theory) and well-being theories.

From Self-Determination Theory perspective, AI can provide instant answers such as when workers are struggling with autonomy or control over their work, it can boost confidence and give decision-making information, basically empowering the workers. It can also provide real-time feedback which can be effective for improving learning that relates to competence. Lastly, it can decrease loneliness or burnout and increase team coordination which might be helpful for achieving relatedness. All of these might lead workers to initiate their intrinsic motivation which is highly supported in workplaces.

On the other hand, psychological well-being has become a central focus of modern psychology, especially as workplaces increasingly incorporate technology and AI-based systems. Psychological well-being refers not only to the absence of distress but also to the presence of positive functioning in everyday life such as emotional stability, purpose, resilience, and a sense of meaningful contribution and belonging. Contemporary models such as Martin Seligman's PERMA model highlight dimensions such as positive emotions, engagement, relationships, meaning, accomplishment, and autonomy as crucial determinants of well-being in life generally and in work environments concretely.

Thus, two variables, motivation and well-being are very important for the work productivity and they can be enhanced with the usage of AI.

**Keywords:** *Artificial Intelligence, Workplace Motivation, Psychological Well-Being, Self-Determination Theory*

# **Federated Learning–Based QR Medication Assistant for Privacy – Preserving Healthcare**

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The increasing digitalization of healthcare highlights the need for secure and intelligent systems that support patients in using medication safely. This study proposes a federated learning–based QR Medication Assistant designed to deliver accurate drug information while preserving user privacy. The system enables individuals to scan the QR code on a medication package, after which an AI model provides details such as dosage guidelines, usage instructions, food interactions, and potential conflicts with other medications.

A key challenge in digital health applications is protecting sensitive personal data. Traditional cloud-based AI systems require uploading user information, which increases privacy risks. To address this issue, the proposed solution integrates federated learning, allowing all user-specific computations—such as drug interaction analysis—to be performed locally on the device. Only anonymized model updates are shared, ensuring that no raw health data leaves the user's phone. This design aligns with modern privacy standards and supports sustainable, secure data processing across IoT-enabled healthcare environments.

The system is especially beneficial for elderly individuals, chronic patients, and those managing multiple prescriptions. By reducing medication errors and providing real-time personalized guidance, it enhances safety while decreasing the workload on healthcare professionals. Federated learning also enables the model to improve over time without compromising confidentiality, making it a scalable and ethically responsible solution.

In conclusion, the proposed QR Medication Assistant represents an effective application of federated learning in healthcare IoT networks. It combines privacy-preserving AI techniques with accessible medical guidance, offering a sustainable technological contribution suitable for smart health ecosystems and academic discussion.

**Keywords:** *Federated Learning; QR Medication Assistant; Privacy–Preserving Healthcare; IoT–Based Medical Guidance*

# The Role of Sustainable Logistics in Building a Greener Future

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This study examines the growing importance of sustainable logistics in creating a greener and more efficient future for both the environment and society. As global supply chains expand and consumption increases, logistics activities—such as transportation, warehousing, packaging, and distribution—have become major contributors to carbon emissions and environmental degradation. Therefore, the need to integrate environmentally friendly practices into logistics systems has become more urgent than ever. This research explores how renewable energy, digital technologies, and circular economy principles can improve logistics operations while supporting environmental protection. One of the key areas of sustainable logistics is the use of renewable energy in transportation and warehousing. Replacing diesel vehicles with electric or hybrid models can significantly reduce emissions. Additionally, installing solar panels on warehouses and logistics centers helps lower energy costs and ensures cleaner operations. The study also highlights how optimizing transportation routes through digital mapping systems can reduce fuel consumption, save time, and improve overall efficiency in the supply chain. Another important aspect is waste reduction and green packaging. Many traditional packaging materials harm the environment due to their long decomposition periods. By using recyclable, biodegradable, or reusable packaging, companies can reduce waste while lowering long-term costs. Furthermore, the adoption of circular economy models—where materials are reused, repaired, or recycled—helps create a more sustainable logistics ecosystem. Digital technologies, such as artificial intelligence, blockchain, and IoT sensors, also play a significant role in transforming logistics. AI-supported systems help predict demand more accurately, prevent unnecessary transportation, and optimize inventory management. Blockchain improves transparency and traceability, ensuring responsible sourcing and reducing fraud in supply chains. IoT sensors monitor temperature, location, and fuel usage, making logistics processes more reliable and eco-friendly. The aim of this study is to show that sustainability and logistics are not separate goals but complementary strategies that benefit both businesses and society. Sustainable logistics helps companies reduce costs, improve brand image, and comply with environmental regulations, while also contributing to a cleaner, healthier, and more livable world. This research demonstrates that integrating green practices into logistics today is essential for building a responsible future.

**Keywords:** *sustainable logistics, renewable energy, circular economy, digital technologies, supply chain.*

# **AI-Driven Edge Computing for Sustainable Smart Cities: Enhancing Urban Sustainability Through AI-Powered Edge Computing**

*Irem Musli*

*International Balkan University*

The increasing demands of urbanization necessitate innovative solutions for energy management, transportation, and public services. AI-powered edge computing offers a promising approach to build sustainable smart cities by enabling real-time data processing and intelligent decision-making directly at the network edge. This reduces latency, lowers bandwidth usage, and decreases dependency on centralized cloud systems, allowing cities to respond more effectively to environmental and infrastructural challenges.

This paper explores the deployment of AI models on edge devices, including smart sensors, connected vehicles, and decentralized energy systems, to monitor and optimize urban operations. By analyzing data locally, edge computing supports automated strategies such as adaptive traffic management, energy-efficient microgrid operations, and proactive waste collection. Processing data at the edge also enhances privacy, improves system resilience, and reduces operational costs.

Furthermore, edge-based AI systems continuously learn from local data, enabling dynamic adaptation to citizen needs and environmental conditions. This decentralized intelligence fosters sustainable urban development by improving resource allocation, reducing energy consumption, and supporting long-term environmental goals.

In conclusion, integrating AI with edge computing provides a scalable and efficient foundation for sustainable smart cities. By combining real-time analytics, automated control, and adaptive learning, urban centers can achieve higher efficiency, reduced emissions, and improved quality of life, positioning AI-driven edge computing as a critical enabler for future urban sustainability.

**Keywords:** *Artificial Intelligence, Edge Computing, Smart Cities, Sustainability*

# AI-Powered Smart Mirror for Real-Time Emotion Detection and Personalized Daily Motivation

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In recent years, intelligent systems have become increasingly integrated into everyday environments, offering new opportunities for enhancing well-being and productivity. This study proposes an AI-powered smart mirror capable of detecting a user's emotional state through facial expression analysis and providing personalized motivational feedback in real time. The goal of the system is to support mental wellness, promote positive daily routines, and offer a more interactive and encouraging morning experience for students and young adults.

The proposed smart mirror is equipped with an embedded camera and a lightweight emotion recognition model trained on facial features such as eye movement, mouth curvature, eyebrow position, and micro-expressions. Using computer vision techniques—including face detection, feature extraction, and classification algorithms—the system identifies emotional categories such as happiness, sadness, stress, tiredness, and neutrality. A convolutional neural network (CNN) is employed for classification due to its strong performance in image-based tasks, while preprocessing steps such as grayscale conversion, normalization, and facial landmark detection improve accuracy and reduce computational load.

Once the user's emotion is identified, the mirror displays personalized motivational messages, wellness suggestions, or productivity tips on an integrated screen. For example, if the user appears tired, the system may recommend stretching, hydration, or a short mindfulness exercise. If the user seems stressed, it may offer calming messages or reminders for balanced scheduling. This interaction aims to provide emotional support in a non-intrusive and easily accessible format.

The results of initial testing demonstrate that the system can reliably classify common emotions under normal lighting conditions, making it suitable for household use. Future improvements may include voice interaction, integration with daily planners, or expanding the emotional categories recognized by the model. Overall, this research highlights the potential of AI-driven ambient devices to enhance emotional awareness and promote healthier daily habits.

**Keywords:** *Artificial Intelligence, Emotion Recognition, Smart Devices, Mental Wellness*

# **From Innovation to Responsibility: Managing AI-Driven Change Toward Sustainable Growth**

*Jana Milevska  
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The rapid advancement of artificial intelligence (AI) has redefined the landscape of modern organizations, influencing how businesses operate, innovate, and compete in a rapidly evolving global market. However, the integration of AI technologies also raises significant concerns related to ethical responsibility, environmental impact, and long-term sustainability. This project explores how companies can strategically manage AI-driven change to foster sustainable growth while maintaining a balance between technological innovation and ethical stewardship. From a strategic management perspective, the study emphasizes the importance of aligning AI initiatives with sustainable development objectives. It focuses on leadership roles, corporate governance, and stakeholder engagement as key enablers of responsible digital transformation. By embedding sustainability principles into AI strategies, organizations can enhance efficiency, transparency, and social value creation, ensuring that innovation contributes positively to both business and society.

A key example of this approach is Tesla, a company that has effectively leveraged AI to drive sustainability and innovation within the automotive and energy industries. Tesla employs AI to improve vehicle performance, optimize energy consumption, and enhance manufacturing processes through automation and predictive analytics. Its use of AI-powered systems such as autonomous driving technology and energy-efficient battery management— illustrates how intelligent innovation can directly support global sustainability goals. Furthermore, Tesla's commitment to renewable energy and reduction of carbon emissions underscores the potential for AI-driven change to align with environmental and social responsibility. Ultimately, this project argues that managing AI-driven change requires more than technological competence, which demands a strategic, ethical, and sustainable mindset. By framing AI as a catalyst for responsible transformation, organizations can ensure that progress in the digital age is not only innovative but also aligned with the long-term sustainability of our planet and society.

**Keywords:** *AI, sustainability, innovation, technology, adoption, strategy, ethics*

# **AI-Driven Edge Computing for Sustainable Smart Cities: Real-Time Optimization of Agricultural Water Usage**

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Global climate change and rapid urbanization are fueling a water scarcity crisis, which represents one of the most urgent challenges to planetary sustainability. The agricultural sector, responsible for over 70% of freshwater consumption, is the primary driver of regional water resource depletion, largely due to inefficient traditional irrigation practices and uncontrolled losses within water distribution infrastructure. Addressing the fateful over-consumption of this critical resource is essential for the resilience of smart cities.

This study proposes an AI-Driven Edge Computing architecture as a radical solution to maximize water efficiency and halt resource depletion. Our approach leverages high-volume data from Internet of Things (IoT) sensors deployed across irrigated fields, water networks, and environmental monitoring stations. By processing and analyzing this data autonomously at the Edge, the architecture eliminates latency, which is often a drawback of centralized cloud systems.

The powerful AI algorithms running on Edge devices provide millisecond-level accuracy in assessing key parameters, including soil moisture, evaporation rates, and plant health. This real-time analysis allows for the dynamic calculation of the absolute minimum water required for each agricultural parcel, thus enabling the irrigation systems to respond instantly to volatile environmental conditions. We aim for a significant increase in agricultural irrigation efficiency, potentially reducing overall water consumption by 25% or more. This integrated system is crucial for enabling sustainable food production within smart cities while fundamentally strengthening regional drought resilience against the intensifying global water crisis.

**Keywords:** *AI-driven edge computing, smart cities, agricultural water management, real-time optimization*

# **Dynamic Pricing in the Age of AI: Balancing Profitability, Fairness, and Sustainability**

*Lejla Bilali*

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The economic and ethical environments in the modern markets are going through significant changes since the creation of Artificial Intelligence (AI) and its implementation into pricing systems. Previously purely shaped by human decision-making and market research, now dynamic pricing has transformed into an algorithmic process which automatically is able to detect changes in demand, consumer behavior, and competition and adjust prices accordingly. It supports improvement in efficiency and profitability, however there are doubts regarding fairness, sustainability, and transparency.

The focus of the paper is exploring and analyzing the relationship between profitability and ethical responsibility in AI-driven dynamic pricing. It examines the algorithmic systems methods of data reading, probabilities of consumer skepticism and discriminatory pricing due to personalization. This study explores how transparent data, interpretable AI, and long-term strategies can be used by firms to make pricing decisions fair and sustainable. Using multiple case studies, it provides a clearer image on advantages and difficulties in managing short-term profitability alongside sustainable brand equity and ethical practices.

The paper aims to understand the impact of AI on dynamic pricing, where profitability, fairness, and sustainability are seen as a package required for a responsible business strategy and not as competitive goals.

**Keywords:** *AI, dynamic pricing, ethics, profitability, fairness, sustainability*

# Ethical Risk Management in AI-Driven Financial Systems

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Artificial Intelligence (AI) is transforming the financial sector by enhancing risk assessment, fraud detection, service personalization, and real-time decision-making. While these advancements improve operational efficiency and accuracy, they introduce significant ethical concerns that require comprehensive governance. This study explores the core principles and emerging challenges of ethical risk management in AI-driven financial systems, with a focus on transparency, fairness, accountability, and data protection. AI models rely on extensive datasets and automated decision-making processes, which may unintentionally reinforce discriminatory patterns, restrict access to essential financial services, or generate opaque outcomes that customers and regulators cannot easily interpret or contest. The research identifies major ethical risks, including biased credit-scoring algorithms, unequal access to AI-enhanced banking solutions, misuse of sensitive consumer data, and the environmental impact of computationally intensive AI models. This study also evaluates regulatory frameworks and industry standards designed to promote responsible AI adoption, including data privacy regulations, algorithmic transparency requirements, and sustainable fintech practices. Furthermore, the paper emphasizes the importance of human-AI collaboration, where human oversight remains crucial for contextual judgment, ethical evaluation, and fairness validation.

To address these challenges, a multi-layer ethical governance model is proposed, incorporating transparent algorithm design, continuous auditing, stakeholder participation, and robust accountability mechanisms. This framework encourages financial institutions to adopt value-driven AI strategies that balance technological innovation with social responsibility. By integrating ethical considerations into every stage of the AI lifecycle—from data collection and model development to deployment and monitoring—organizations can create financial systems that are efficient, trustworthy, equitable, and environmentally conscious. Ultimately, ethical risk management is essential for maximizing the benefits of AI-enabled financial services while minimizing harm, fostering public trust, and ensuring long-term resilience in digital financial ecosystems.

**Keywords:** *Artificial Intelligence, Financial Ethics, Risk Management, Algorithmic Fairness*

# Federated Learning for Sustainable Data Privacy in IoT Networks

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In the field of computer engineering, Federated Learning (FL) has been hailed as a promising solution to address the growing concerns over data privacy in Internet of Things (IoT) networks. FL enables the training of machine learning models without the need to centralize sensitive data, supposedly offering a way to preserve user privacy. However, can we truly trust that this approach ensures sustainable privacy for users? Is federated learning a definitive solution, or merely a temporary fix that masks underlying issues? While FL reduces the necessity of sharing raw data, it does not eliminate the risks of inference attacks or model poisoning. Additionally, the heterogeneity of IoT devices and their resource limitations complicate the practical deployment of FL, presenting challenges that are often underestimated.

From a philosophical perspective, we face a fundamental question: can FL truly guarantee privacy without sacrificing transparency or user autonomy? While federated learning may appear to offer an ethical approach to privacy, distributed systems can create a false sense of security. Floridi argues that the ethics of information must extend beyond technical limits and address the social and political implications of technologies. Despite the advancements in privacy, we must question whether the FL model, as merely a technical framework, adequately tackles the trust and accountability issues surrounding personal data usage in IoT contexts.

In conclusion, while federated learning offers significant privacy advantages in IoT networks, its real-world implementation needs to be evaluated beyond algorithmic measures. It must consider the philosophical and ethical implications of personal data use. The sustainability of privacy in this context depends not only on technology but also on the trust and autonomy granted to users.

**Keywords:** *Federated Learning, Privacy, Internet of Things, Ethical AI*

# **Cybersecurity in Smart Manufacturing: Risk Assessment, Challenges, and Strategic Countermeasures**

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The digital transformation of manufacturing, driven by Industry 4.0 and further advanced by Industry 5.0, has led to highly interconnected and intelligent production systems that integrate Cyber-Physical Systems (CPS), Industrial Internet of Things (IIoT), Artificial Intelligence (AI), and cloud computing. While these technologies offer significant benefits in efficiency, flexibility, and customization, they also introduce complex cybersecurity risks that threaten both digital assets and physical infrastructure. This study investigates the evolving cybersecurity landscape in smart manufacturing, highlighting the vulnerabilities arising from legacy systems, inadequate governance, and human-machine collaboration. It reviews the limitations of traditional Information Technology (IT) security models in protecting operational technology (OT) and proposes advanced risk assessment methodologies including dependency-based modeling, structural equation modeling, and blockchain-based monitoring. A key contribution of this work is the design and implementation of CyberDefend Pro, a simulation platform that visualizes cyberattack propagation across industrial systems, enabling dynamic risk analysis and mitigation planning. The results indicate that the adoption of holistic, adaptable, and ethically sound cybersecurity policies that guarantee resilience and confidence during the shift to Industry 5.0, especially in the underdeveloped regions like the Western Balkans, is possible.

**Keywords:** *Industry 4.0, Industry 5.0, Cyber-Physical Systems, Industrial Internet of Things, Programmable Logic Controllers, Long Short-Term Memory Autoencoder, Machine Learning, Artificial Intelligence.*

# Future of Sustainable, Personal, and Enterprise Cloud Operating Systems

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As cloud computing importance becomes the unavoidable synonym of digital infrastructure, the sustainability of personal and enterprise cloud operating systems (OS) emerges as a defining challenge for technology's next decade. This abstract presents a theoretical framework in which sustainability is understood as a combination of environmental need, operational resilience, and scalable resource management, each crucial for meeting the exploding demands among others of the infrastructure and eco-aware early adopters. The primary theme focuses on the evolution of cloud OS architectures that leads in the integration of green computing principles without sacrificing reliability or performance. Modern cloud operating systems are increasingly required to manage an ever increasing amount of geographically distributed, heterogeneous resources while dynamically responding to vibrating workloads. The abstract explores new and unorthodox developments in virtualization, containerization, and microservices, which all allow for more precise power management and intelligent workload avoidance. AI and machine learning driven optimizations are highlighted as a bright candidate for predictive scaling, energy-aware scheduling, and real-time anomaly detection - technologies essential for minimizing energy consumption and carbon footprint. As well as personal human-level elevation of mundane tasks and increased worker and artist possibilities.

In the enterprise context, sustainability imperatives are influencing cloud service providers to adopt transparent reporting, flexible resource pooling, and adaptive redundancy models that reduce waste and enhance system longevity. Simultaneously, private edge computing environments are leveraging tailored OS solutions to address domain-specific compliance and efficiency targets, incorporating renewable energy sources and innovative cooling approaches. The intersection of these trends shapes a new standard for OS design, where sustainability extends beyond power consumption to include lifecycle management, eco-friendly hardware integration, and automated policy compliance. The future of cloud operating systems, as outlined, is one of convergence: bridging technological innovation, regulatory frameworks, and sustainability goals. By embedding sustainable perspectives into the foundation of OS architecture, personal and enterprise cloud platforms will drive both economic and environmental value - positioning themselves as essential agents for global digital transformation.

**Keywords:** *Cloud Operating Systems, Sustainability, Green Computing, AI Optimization*

# **A Comparative Analysis of the Role of the Media in Shaping Political Opinion and Decision-Making: The Macedonian Fake News Industry and the 2016 US Election**

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This study explores the dynamic relationship between digital media, misinformation, and political decision-making through a comparative examination of the Macedonian fake news industry and the 2016 U.S. Presidential Election. The research investigates how economic incentives, social media algorithms, and political interests intersected to produce an environment ripe for disinformation. Using a mixed-method approach—combining quantitative analysis of online engagement data and qualitative interviews with journalists and academics—the study highlights how Macedonian content creators exploited online advertising systems to circulate fabricated political stories, many of which disproportionately favored Donald Trump’s campaign. The findings reveal that algorithmic amplification, echo chambers, and confirmation bias significantly shaped voter perceptions, eroding trust in democratic institutions. Incorporating recent post-2020 developments, the paper also examines the impact of artificial intelligence and deepfake technologies on disinformation trends, emphasizing their potential to manipulate public discourse at scale. Policy recommendations include enhanced algorithmic transparency, mandatory media literacy education, and international cooperation to counter transnational misinformation networks. Ultimately, the study underscores that safeguarding democratic integrity in the digital era requires coordinated action among governments, technology platforms, and civil society to restore public trust and strengthen resilience against digital manipulation.

**Keywords:** *Digital Media, Misinformation, Political Decision-Making, Disinformation*

# **Synthetic Realities: The Ethics of AI in Filmmaking and Visual Storytelling**

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The rapid integration of artificial intelligence into filmmaking and visual storytelling fundamentally redefines the boundaries between creativity, authorship, and authenticity, ushering in an era where cinematic truth itself is contested.

As generative image models, deepfake technologies, neural rendering systems, and automated editing platforms become central to production workflows, the ethical implications of these synthetic realities grow increasingly complex. This paper examines how AI comprehensively reshapes the film industry's creative ecosystem, from algorithmic scriptwriting and virtual casting to real-time post-production manipulation and predictive audience analytics, highlighting the profound tension between technological innovation and moral responsibility.

While AI democratizes cinematic creation, reduces production costs, and exponentially expands visual expression—enabling previously impossible narratives and aesthetic experiences—it simultaneously risks eroding human authorship integrity, distorting truth perceptions in visual media, perpetuating harmful social stereotypes, and deepening cultural biases embedded within algorithmic systems trained on historically inequitable datasets. Drawing on contemporary case studies from major studio productions, independent films, and streaming platform experiments, alongside critical theory from media studies, philosophy of technology, and digital ethics, this research explores how filmmakers, producers, distributors, and policymakers can collaboratively establish robust ethical frameworks balancing technological advancement with accountability, transparency, and cultural sensitivity. It rigorously interrogates the provocative notion of "synthetic authenticity," where AI-generated or hybrid content gains cultural legitimacy and emotional resonance despite artificial origins, fundamentally challenging assumptions about what constitutes "real" in visual art and documentary practice.

The study examines questions of labor displacement, intellectual property rights in AI-collaborative works, and the psychological impact of hyper-realistic synthetic media on audience perception. Ultimately, this research calls for comprehensive rethinking of cinematic ethics in the age of intelligent machines—not as creativity constraints, but as necessary foundations for preserving narrative integrity in storytelling.

By framing AI not merely as a passive tool but as an active co-author and ethical agent requiring governance, the research opens critical pathways toward responsible innovation that honors both artistic freedom and collective truth while safeguarding the human elements that make cinema a transformative cultural force.

**Keywords:** *AI Ethics, Synthetic Media, Digital Authorship, Algorithmic Bias, Visual Storytelling, Deepfakes, Cinematic Truth*

# Modern Technology and Its Role in Advancing Space Exploration

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Space and the universe continue to fascinate us, and modern technology helps us explore them in deeper ways. With advanced telescopes, spacecraft, and AI-based tools, scientists can study faraway galaxies, discover new planets, and understand cosmic events more clearly. These technologies make it easier to recognize patterns and process large amounts of data.

One important advantage of today's space research is accessibility. Through online simulations, virtual models, and real-time satellite images, students and anyone interested can explore the universe from anywhere. Automated systems also help scientists by handling simple data-processing tasks.

However, there are still challenges. Space missions are costly, some parts of the universe remain unreachable, and issues like satellite pollution raise ethical questions. And no matter how advanced technology becomes, it cannot replace human creativity and critical thinking.

In conclusion, modern tools support—rather than replace—human exploration. When used effectively, they make space research more efficient and engaging, helping us better understand the universe

**Keywords:** *space research, artificial intelligence, telescopes and spacecraft, accessibility in science*

# Artificial Intelligence (AI) in Mental Health: Benefits, Risks, and Ethical Problems

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The growing use of artificial intelligence (AI) in mental health care is changing how psychological support is delivered. Tools such as chatbots and digital therapists are becoming more common, offering quick access to guidance, basic interventions, and self-help resources. Although these technologies can make mental health support more available to people who might otherwise struggle to access it, they also raise important ethical and therapeutic questions. This theoretical paper examines these questions by focusing on issues such as autonomy, informed consent, data privacy, algorithmic bias, responsibility, and the impact of AI on the therapeutic relationship.

The paper draws on several ethical perspectives, including principlism, care ethics, and posthumanist approaches, to discuss how AI challenges traditional ideas about the roles of clinicians and clients. It also considers whether AI systems can genuinely contribute to essential therapeutic processes such as empathy, emotional understanding, and the development of trust. In addition, the paper explores how digital therapists may influence people's expectations of mental health care and how they might change patterns of help-seeking behavior.

While AI-based tools have the potential to support mental health services in meaningful ways, the paper argues that their use must be guided by strong ethical standards, transparent design, and ongoing human oversight. To support this, the paper suggests several principles for clinical practice, policy development, and technology regulation, emphasizing accountability, user protection, and the need to safeguard vulnerable groups. Overall, the aim is to offer a clear framework for thinking about both the opportunities and the limitations of AI in mental health care, and to highlight the importance of keeping human well-being at the center as these technologies continue to evolve.

**Keywords:** *Artificial Intelligence, Mental Health, Ethics, Digital Therapy*

# **Artificial Intelligence in the Legal Field: A Necessity or Need?**

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In a legal sense, necessity is concerned with the efforts of states and individuals to adapt to changing situations and survive. Legal institutions must come up with adaptable frameworks that can adapt to social change and emerging technologies. Since the primary goal of states is to protect themselves and preserve public well-being, the doctrine of necessity has long been used in international law to excuse state action in crises. In this regard, artificial intelligence application in the legal profession must be a requirement and not a compulsion. AI supports a multidisciplinary approach to the study of law and makes incorporation of criminology, legal sociology, and legal psychology feasible. Law school curricula must be updated so that students are taught to efficiently utilize AI as a research and writing tool, thus rendering the graduates work-ready with high-skill demand from employers. The use of AI will not be expected to destroy legal professions but will reshape them, creating better and more innovative workspaces. These resources must be designed sensibly and utilized as service tools regardless of technological development. Humans, being the center of the universe and the most virtuous of created things, have the capability to embrace innovations that transform societal life. It is worth emphasizing that humans can never be placed behind machines. The more complicated the world gets, the more the multiple functions can be embraced by AI; yet, inquisitive and innovative minds, if combined, can harness unparalleled opportunities for development. Knowledge is the key to solving problems facing our world, and the distribution of AI makes it possible to share the knowledge. Digital transformation is not an issue but rather part of the solution and will play an essential role in addressing near-term global challenges.

**Keywords:** *Law, Artificial Intelligence, Criminology, Legal Profession, Innovation*

# AI in Social Media Campaigns: Major Success or Signs of Failure

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Artificial Intelligence (AI) has become a major part of the modern communication and marketing world. We see it everywhere, in the tools that we use to create our marketing masterpiece, in the services of platforms that connect us with the public, even in the content itself.

Although AI is widely used, is it really considered a success when we include it in our campaigns that we let the whole world see, or is it a clear sign of failure? While artificial intelligence has raised its visibility through social media campaigns, its level of effectiveness is being questioned by the mass public.

Through this paper, we will analyze the different ways of how AI has been used in Social Media Campaigns from various brands and companies. We will evaluate the different perceptions that have been formed by the targeted audience, what kind of effect has it had to the company itself.

In order to get to the final results, I have used multiple methods to try and figure out some answers. The case study is based on a comparative analysis, through which I review successful and failed social media campaigns that have AI included in them. As an addition to my research, I use the case study analysis, where I looked at specific campaigns where AI was used.

According to my findings, AI definitely creates a lot of efficiency and engagement, but it also makes the brand look like it lacks authenticity, innovative skills, ethics and long-term trust. While following trends helps you engage more with your audience, non-strategic use of AI can take over your branding and image negatively.

Overall, the success of your AI Social Media Campaign depends on the way you use AI and how much you let it take over your brand.

**Keywords:** *Artificial Intelligence, Social Media Marketing, Brand Engagement, Campaign Effectiveness*

# **Attracting Investments in Renewable Energy and Protecting Investors' Legitimate Expectations: Insights from Italy and Spain in the Renewable Energy Sector**

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Attracting foreign investment in renewable energy is one of the key steps toward sustainable development, but excessive or poorly designed regulatory frameworks adopted by the state can create significant legal and financial risks. These frameworks are often interpreted as binding “commitments” to investors, and arbitral tribunals may rule that the state is obliged to comply with them. The hypothesis of this paper is that misalignment between public resources and investment promotion policies may result in arbitral disputes, in which investors claim that the principle of fair and equitable treatment (FET) has been violated, as their legitimate expectations, one of the dominant element of FET, has been breached. The paper examines the experiences of Italy and Spain, which have faced ECT claims arising from changes in subsidies and tariffs for renewable energy. Special attention is given to legal and economic mechanisms that ensure a balance between attracting investments, protecting the public interest, and respecting investors' legitimate expectations. The aim is to critically analyze arbitral practices and decisions and to draw lessons that should be considered when designing regulatory frameworks, highlighting the importance of investment law as a tool to align public interest with investment promotion.

**Keywords:** *Investment Law, Renewable Energy Investments, Regulatory Frameworks, Investor–State Arbitration, Fair and Equitable Treatment, Legitimate Expectations;*

# The role of English as a global language in a digitally driven world

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Even though English as the dominant global language has established itself as the most widely used language in the globe, particularly in the field of technology, education, business, and digital communication, there are still some concerns in an increasingly linked and technologically advanced world. English often serves as the default medium of Artificial Intelligence (AI). Machine learning, and globalised digital platforms continue to change the way how people communicate and receive information. This paradoxically limits linguistic inclusion, while also facilitating access. Given the impact of Artificial Intelligence (AI), digital communication, and cultural sustainability, the role of English as a global language in a digitally driven world has radically changed the way we speak, learn, and teach. However, the widespread use of English often offers very practical benefits, including the promotion of cross-cultural collaboration, knowledge sharing, international mobility, and enhancing career prospects. But at the same time, it also raises serious ethical issues, with regard to linguistic inequality, the cultural homogenization, and the marginalization of less-presented languages in digital spaces. With the rise of Artificial Intelligence (AI), powered technologies (language models, translation systems, educational platforms), English frequently serves as the default language of communication, reinforcing its dominance while limiting inclusivity for non-English speakers. Therefore, the study pays a particular attention to the dominance of English, which interacts with concerns of sustainability, equity, and cultural preservation by utilising multidisciplinary viewpoints from applied linguistics, digital humanities, and AI ethical studies. In order to be promoted multilingualism, respected cultural identities, and guarantee equitable linguistic representation in digital spaces, the paper will advocate for a more responsible and inclusive approach to language technology development. In the end, the study contends that as we negotiate the future of international communication, educators, legislators, and tech developers need to make a deliberate effort to strike a balance between the pragmatic benefits of English and the moral need to preserve and advance linguistic and cultural diversity in our increasingly AI-driven society.

**Keywords:** *English, Artificial Intelligence (AI), Linguistic Inequality, Cultural Sustainability, Multilingualism, Language Technology, Ethical AI, Linguistic Inclusion, Digital Platforms*

# **The Politics of Sustainability: How Domestic Political Conflicts Shape Economic Governance and Climate Policy Implementation**

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The internal political climate is a crucial aspect to consider when governments try to enact policies, having in mind that internal instabilities can lead to inefficient policy-making and weak governance, impacting the adaptation and implementation of policies. Having in mind the importance of sustainability and green transition in contemporary economic development, the internal domestic political climate is important to understand and analyze how it impacts complex demands of climate mitigation, adaptation, and green economic transition. Global sustainability frameworks such as the Paris Agreement and national climate strategies provide long-term objectives, however, their success depends on coherent domestic governance structures capable of sustaining policies across electoral cycles and having the necessary determination as well as political support to implement such policies. This highlights the crucial role that political stability and legitimacy plays in implementing and realizing fiscal and financial policies, especially ones such as climate policies and green economics which is an area open to interpretation and varying political perspectives across the spectrum. This paper investigates how political instability, polarization, and competing partisan interests influence the quality of economic governance and the implementation of climate policies, utilizing a comparative political economy approach, the paper analyzes how varying degrees of political stability and institutional strength affect climate-related governance outcomes. The paper will propose the argument that the politics of sustainability cannot be separated from broader questions of institutional design and economic governance.

**Keywords:** *Economic governance, Green economics, Sustainability, Political Instability*

# Ethical Decision-Making in AI-Powered Supply Chains

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The rapid integration of Artificial Intelligence (AI) into supply chain operations has transformed how organizations forecast demand, manage inventory, optimize logistics, and evaluate supplier performance. While these advancements improve efficiency, reduce operational costs, and enhance real-time decision-making, they also introduce complex ethical challenges that require careful governance. This study examines the core principles and emerging issues of ethical decision-making in AI-powered supply chains, focusing on transparency, fairness, accountability, and privacy. AI systems often rely on large datasets and automated algorithms that may inadvertently reinforce biases, create unequal treatment of suppliers or workers, or make opaque decisions that stakeholders cannot fully understand or challenge. In addition, increasing reliance on AI raises concerns about workforce displacement, surveillance of employees, and the erosion of human oversight in critical operational areas.

The paper highlights key ethical risks such as biased procurement algorithms, unequal access to digital tools across global suppliers, exploitation of data collected from consumers or logistics partners, and environmental impacts driven by AI-optimized yet resource-intensive operations. It also evaluates existing regulatory frameworks and industry guidelines that aim to ensure responsible AI use, including data protection laws, algorithmic audit standards, and sustainable supply chain policies. Furthermore, this research emphasizes the importance of human-AI collaboration, where human judgment remains essential for overseeing automated outcomes and ensuring fairness and contextual sensitivity.

To address these challenges, the study proposes a multi-layer ethical governance model that incorporates transparent algorithm design, continuous auditing, stakeholder participation, and clear accountability mechanisms. The model encourages firms to adopt value-driven AI strategies that align technological performance with social responsibility. By integrating ethical considerations into each stage of the supply chain—from raw material sourcing to last-mile delivery—organizations can build AI systems that are not only efficient but also trustworthy and socially sustainable. Ultimately, ethical decision-making is crucial to maximizing the benefits of AI-powered supply chains while minimizing harm and fostering long-term resilience.

**Keywords:** *Artificial Intelligence, Supply Chain Management, Ethical Decision-Making, Algorithmic Transparency*

# **Ethical and Sustainable AI in Future Urban Innovation: Integrating Edge Computing, Federated Learning, and Responsible Decision-Making**

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The rapid integration of artificial intelligence into modern urban systems is transforming how cities operate, communicate, and evolve. This study examines the intersection of AI-driven edge computing, federated learning, and ethical decision-making within the context of sustainable smart city development. As intelligent infrastructures increasingly rely on decentralized data processing, the research explores how edge-based AI can enhance energy efficiency, reduce computational waste, and support real-time urban responsiveness without compromising user privacy. Drawing on interdisciplinary perspectives from computer science, ethics, and environmental sustainability, the paper evaluates the challenges posed by data inequality, model transparency, environmental footprint, and algorithmic accountability in AI-powered city environments. Furthermore, the study investigates how federated learning frameworks can preserve data privacy in large-scale IoT ecosystems while simultaneously strengthening the resilience and sustainability of urban services. The analysis proposes a set of ethical guidelines and sustainable operational principles for integrating AI into critical systems such as transportation, supply chains, environmental monitoring, and architectural design. By situating emerging technologies within a broader ethical and ecological framework, this research aims to provide a roadmap for cities seeking to adopt AI responsibly. Ultimately, the findings contribute to ongoing discussions on how future urban innovation can remain technologically advanced while upholding values of sustainability, inclusivity, and ethical integrity.

**Keywords:** *AI-driven Edge Computing, Smart Cities, Sustainability, Ethical AI*

# AI in Mental Health Care: Ethical and Therapeutic Implications of Chatbots and Digital Therapists

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AI-driven chatbots and digital therapists are emerging as innovative solutions in mental health care due to the quick development of AI. These tools are being used more and more frequently to offer structured therapy interventions, emotional support, and psycho-education, especially in situations where access to mental health experts is restricted. Despite their increasing popularity, there are still many unanswered questions about their long-term psychological effects on users, the therapeutic efficacy, and ethical integrity. This study uses a mixed-methods approach that combines an exploratory qualitative analysis with a systematic literature review to investigate the ethical and therapeutic implications of AI-based mental health technologies. In terms of user results, therapeutic alliances, privacy problems, and the clinical validity of algorithmic decision-making, the literature review summarizes empirical findings from the last ten years. In order to comprehend issues pertaining to trust, emotional dependence, perceived empathy, and boundary ambiguity in interactions with AI systems, additional qualitative method also examines user involvement and reported experiences.

Data confidentiality, informed consent, algorithmic transparency, cultural sensitivity, and possibility of bias in training datasets are among the fundamental ethical issues that the study critically assesses. It also examines therapeutic aspects such how AI systems might promote emotional regulation, encourage meaningful involvement, and serve as additional tools in clinical practice without diminishing the role of human therapists. The results show the potential and drawbacks of AI-driven mental health technologies: although they might increase access to mental care and lessen stigma, they also run the risk of misinterpreting user distress, making vulnerable people over-rely on them, and weaken human aspects necessary for psychological healing. In order to guarantee that AI systems supplement rather than replace professional mental health care, the abstract ends by highlighting the necessity of explicit ethical frameworks, interdisciplinary collaboration, and evidence-based guidelines. The goal of this research is to add to the scholarly and clinical discourse regarding the responsible, safe, and successful integration of AI into modern therapeutic settings.

**Keywords:** *Artificial Intelligence, Mental Health Technology, Ethical Considerations, Digital Therapy*

# Digital Therapists and the Human Touch: Ethical and Emotional Challenges in AI-Assisted Mental Health Care

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The rapid spread of artificial intelligence into mental health care has opened real opportunities for broader access, early support, and flexible interventions. Digital therapists and psychological chatbots can offer quick guidance, structured CBT-style tools, and a non-judgmental space for people who may feel hesitant to approach a human professional. Yet these advantages come with important ethical and emotional questions that cannot be ignored. Psychotherapy has always relied on something deeply human—empathy, attunement, and the therapeutic alliance. Decades of research highlight that these relational qualities consistently predict improvement as strongly as, and often more than, specific therapeutic techniques.

AI, however advanced, does not share lived experience, emotional intuition, or the subtle bodily awareness required to read nonverbal cues or co-regulate a client's nervous system during distress. Because of this, it remains outside the core relational mechanisms that make therapy effective. This paper explores what genuinely human elements shape the therapeutic process, where AI tools can be helpful, and where they fall short—particularly around misguidance, data vulnerabilities, and risks for sensitive groups.

AI can certainly strengthen mental health systems when used thoughtfully and ethically. It can expand reach, reduce stigma, and provide support between sessions. But it cannot step into the emotional depth, interpersonal safety, or relational resonance that define psychotherapy. Ultimately, the future of mental health care is likely to depend not on replacing therapists with machines, but on integrating technological tools in a way that protects—and centers—the profoundly human nature of healing.

**Keywords:** *Artificial Intelligence; Digital Therapists; Therapeutic Alliance; Embodied Presence; Ethical Challenges; Mental Health Technology; Human–AI Interaction*

# AI—Powered Language Learning Tools

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Artificial intelligence (AI) is becoming an important part of language learning, offering learners and teachers new ways to interact with and explore a language. AI-powered tools, such as adaptive learning apps, chat based tutors, and automated feedback systems make it possible for students to receive support that fits their individual needs. These tools can notice common mistakes, track progress, and provide quick feedback, helping learners build vocabulary, improve grammar, and develop stronger speaking and writing skills.

One of the biggest advantages of AI in language learning is flexibility. Students can practice whenever it suits them, which encourages independent learning and makes language study more accessible. Features like speech recognition allow learners to practice pronunciation in real time, while text generation and translation tools help them understand complex texts or express ideas more confidently. For teachers, AI can reduce the time spent on routine tasks such as grading or checking exercises, giving them more room to focus on communication based activities and student interaction. At the same time, it is important to recognize the limitations of these tools. Concerns about data privacy, the risk of depending too much on technology, and unequal access to devices and internet connection all present challenges. Most importantly, AI cannot replace the cultural insights, emotional support, and human connection that teachers bring to the classroom.

Overall, AI-powered language learning tools work best when used as a complement to traditional teaching rather than a replacement. When implemented thoughtfully, they can create a more engaging and personalized learning experience that supports both teachers and students while improving overall language development.

**Keywords:** *Artificial Intelligence, Language Learning, Adaptive Learning Tools, Educational Technology*

# **Reimagining Cultural Centers for a Sustainable Future: Integrating Environmental Design, Community Engagement, and Adaptive Reuse**

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In the context of worldwide environmental crisis and social transformation, cultural centers need to transform themselves from sites for art and performance into dynamic, sustainable, community-fully-present spaces. This research paper explores how sustainable design practices and participatory methods can re-envision the cultural infrastructure of the 21st century. The research highlights the synergy between environmental design remedies and social inclusion/cultural identity in built environment.

The research involves a critical review of literature, case studies and theoretical models to articulate drivers that support energy efficiency and health responsive strategies in the design of cultural centers. Passive design strategies - natural ventilation, daylighting and temperature control are explored in order to determine their ability to lower carbon footprints and make better spatial and user environments. Alongside community engagement is examined as a necessary process to make these spaces become the places of common values, social diversity and local culture narrative.

Moreover, adaptive reuse becomes crucial in prolonging the useful life of old buildings, waste reduction & historic continuity. And by revitalising disused structures as multidisciplinary cultural spaces, adaptive reuse mitigates the tension between environmental stewardship and city-making. The paper contends that the combination of environmental design, community engagement and adaptive reuse can deliver cultural facilities that respond to ecological imperatives (indeed, are sustainable), while serving as drivers for social innovation and resilience.

In the end, this study extends sustainable architectural dialogue by suggesting an integrated model for the future of cultural centers—sites that are context-aware, technology-driven and community led. The results have implications for architects, planners and stakeholders who strive to balance sustainability with cultural vibrancy in today's urban contexts.

**Keywords:** *Social transformation, Theoretical models, Design strategies, Ecological imperatives*

# Post-Human Aesthetics: How AI Shapes the Visual Language of Contemporary Art

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What happens to art when the tools we use start to think for themselves? This is the primary question that prompted me to explore how AI is changing the visual language of contemporary art. I grew up believing art was about personal expression, emotion, and the slow, physical process of making. Now, I see images online that were created in seconds by systems that can't feel anything, and somehow, they still work on their own. This shift brings curiosity and confusion in us humans, as it is slowly becoming a new challenging area.

AI makes it easier to create visuals of concepts that artists have created for hours or even days of work. This influences the creative process behind it, and some artists embrace it, while others view it skeptically because it takes away parts of what makes art personal. Many worry that AI can copy styles without asking permission, since it learns from images online. Others feel uncomfortable because they don't fully understand how AI makes decisions, which makes the creative process feel less human. There is also a fear that AI will make everything look similar, repeating patterns from the data instead of creating something truly new. And, some artists are scared that AI might replace certain creative jobs, making it harder for them to make a living from their work. I find this tension essential to understanding post-human aesthetics. The concept of "post-human" does not mean replacing the human; instead, it questions the idea that creativity belongs only to us. In this research, I plan to explore works by contemporary artists who use AI not just as a tool, but as a "partner artist" who questions authorship, originality, ethics, and machine-generated content. Even in contemporary functions across different mediums such as performance, sound art, installation, and so on; AI can contribute to each of them through data, sensors, and generative algorithms. This collaboration between humans and non-humans is a new aesthetic practice, and as someone who still enjoys slow, imperfect processes of making art by hand, it is a huge challenge. These concerns are not abstract, they directly influence how we, as artists and designers, position ourselves in a changing creative environment. Therefore, this research aims to explore and understand AI as a collaborative tool. Not to argue whether it is good, or bad, but to observe through different contemporary artists how it changes the way we see, think, and work since it has taken a turning point all around the world, especially in the contemporary art world.

**Keywords:** *Artificial Intelligence, Contemporary Art, Post-Human Aesthetics, Creative Collaboration*

# **Integrating Blockchain and AI for Sustainable and Efficient Global Supply Chains: A Synthesis of Current Research**

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*International Balkan University*

Modern global supply chains are confronted with the dual challenges of enhancing operational efficiency while simultaneously improving environmental sustainability. The complexity of multi-echelon networks, the rapid growth of cross-border e-commerce, and increasing pressure to account for environmental impacts demand a new technological paradigm. This paper synthesizes current research to propose that the synergistic integration of Blockchain Technology (BCT), Artificial Intelligence (AI), and the Internet of Things (IoT) offers a transformative framework to address these challenges. By combining the immutable and transparent data ledger of blockchain, the real-time data acquisition of IoT, and the predictive and automated decision-making capabilities of AI, this integrated system can create unprecedented levels of trust, visibility, and optimization. Key applications explored include advancing Green Supply Chain Management (GSCM) through reliable environmental foot printing and resource optimization, as well as streamlining cross-border e-commerce logistics by reducing fraud, automating customs, and securing payments. While implementation hurdles related to cost, data management, and standardization exist, the potential for this integrated framework to engender more resilient, efficient, and sustainable global supply chains is substantial.

**Keywords:** *Blockchain Technology (BCT), Green Supply Chain Management (GSCM), Cross-Border E-Commerce, AI-IoT Integration*

# Artificial Intelligence and Child Development: Exploring the Cognitive, Emotional, and Social Implications of Smart Technologies

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The integration of artificial intelligence (AI) into children's everyday environments has sparked increasing interest in its developmental implications. This paper examines the influence of AI-based technologies on children's cognitive, emotional, and social growth, emphasizing both opportunities and risks. On the cognitive dimension, AI-powered educational platforms can enhance memory, attention, and problem-solving by offering personalized learning experiences. However, reliance on readily available information may hinder critical thinking and creativity. Emotionally, social robots and conversational agents can promote empathy and emotional awareness, yet they also raise concerns about dependency and the potential substitution of authentic human relationships. Socially, AI-driven games and digital platforms can foster collaboration and communication skills, but overexposure may contribute to social isolation, reduced face-to-face interaction, and cyberbullying.

The theoretical framework of this study draws on developmental psychology, particularly Piaget's cognitive constructivism, Vygotsky's sociocultural theory, and Erikson's psychosocial stages. From Piaget's perspective, AI tools may accelerate learning within specific developmental stages, while Vygotsky's notion of the "zone of proximal development" highlights AI's potential as a supportive scaffold for children's learning. In contrast, Erikson's theory warns against the risk of weakened identity formation if virtual interactions replace real social bonds. This framework provides a holistic lens through which the dual impacts of AI can be assessed.

The findings underscore the necessity of guided use, ethical regulation, and parental or educator supervision to ensure that AI contributes positively to children's well-being. Rather than rejecting or uncritically embracing technological innovation, a balanced approach is essential. This paper seeks to contribute to this discussion by offering a theoretical perspective that highlights both the promises and challenges of AI in child development, aiming to support responsible integration of these technologies into educational, familial, and social contexts.

**Keywords:** *artificial intelligence, child development, cognitive development, emotional development, social development*

# How Text, Video, and AI Help Students Learn English

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This study analyses how combining text, video, and AI-generated materials responsibly can enhance English learning in modern educational environments. Today's learners have different preferences, as some understand best through reading, others through watching, and many through interaction. Combining these three formats allows English learners to study in a more flexible, engaging, and personalized way. The purpose of this research is to examine how using multiple types of materials can help learners remember English content, stay motivated, and feel more confident in using the language while also creating a supportive and interactive experience.

The findings suggest that each type of material contributes uniquely: text provides structure and clarity, videos add visual and emotional context, and AI-generated content offers personalized help to meet each learner's needs. When used together responsibly, these resources allow learners to ask questions, work through reading, listening, and grammar exercises at their own pace, and reduce anxiety in English learning. Teachers also benefit, as AI can handle repetitive tasks like generating summaries, creating practice exercises, or providing materials suitable for different levels, giving educators more time to focus on effective English instruction and direct learner support.

However, there are still some challenges. AI-generated content may occasionally contain inaccuracies, and issues such as data privacy, depending too much on AI, and ethical considerations require careful attention. The goal is not to replace traditional teaching, but to enhance it in a careful, balanced, and practical way, ensuring that technology supports rather than takes over the human element in English teaching.

To sum it all up, combining text, video, and AI-generated materials responsibly offers a human-centered approach to English education, one that adapts to different learning styles, boosts confidence, and helps learners navigate the digital tools for English learning while making sure teaching stays responsible and effective.

**Keywords:** *English Learning, Multimodal Education, Artificial Intelligence, Educational Technology*

# **Financing the Green Transition: How sustainable investments affect Debt Sustainability in Developing Economies**

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Developing countries face a substantial dilemma when it comes to managing the complex interplay between climate policy and transitioning to green economics, to achieving debt sustainability and long-term sustainable development. The transition towards environmentally conscious, green sustainability requires profound investment and financing which is especially difficult when it comes to developing countries, which tend to face higher financial strain, budget deficits and fiscal instabilities. The challenges of debt management and sustainability are particularly sizeable when it comes to developing countries which face particular difficulties ranging from institutional shortcomings to fiscal mismanagement and low investments and market volatilities, which highlights the importance of understanding the returns from substantial sustainable investments for developing countries. Understanding the impact of green investments on debt sustainability in developing countries will help provide an insight into its affects on fiscal stability, long-term development and financial prospects of said countries. This paper will analyze the impact of sustainable development on debt management for developing countries, with the aim of highlighting the returns of said investments for developing countries, while also providing insight on the challenges which developing countries face on the path to green transition. The findings of this research will highlight how developing countries have faced with green economics, the challenges and results of said investments and how these policies impact the debt sustainability of developing countries.

**Keywords:** *Sustainability, Green economics, Developing economies, Infrastructure, Debt management*

# Federated Learning Privacy-Preserving Approach For Data Breach Detection Systems In IoT Devices In Brain Research

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IoT networks in healthcare devices typically handle sensitive data. Breaches of the Internet of Things (IoT) devices are a common concern. This research examines federative learning (FL) as a privacy-preserving approach for IoT data breach detection systems, particularly those used in brain research and healthcare applications, such as functional near-infrared spectroscopy (fNIRS) and electroencephalography (EEG). Federated learning is a privacy-focused machine learning method that relies on collaboration between multiple independent devices to train algorithms on servers without sharing data. In machine learning, data is typically sent to a central server, while in federated learning, data remains local to the devices. This significantly enhances data security. In this study, data transfers are performed via COM ports on users' local devices. The software methods used in the project are Python (Pycharm IDE), JSON (JavaScript Object Representation), MySQL, and XAMPP (Extended Apache/MariaDB/PHP/Perl). Applications in fNIRS and EEG devices used in brain research access serial ports on computers as COM ports. Some USB devices function as virtual COM ports, allowing applications to access physical serial ports in the same way. Microcontrollers, neuroscience sensors, and other intelligent systems can use serial ports to communicate with each other. In conclusion, this is a software project that uses federative learning to record and analyze COM-Port activity and serial ports. This project preserves data locality and allows intelligent systems to monitor, record, and secure all data passing through serial ports. Federated learning prioritizes data sharing that increases accuracy and protects privacy. Therefore, federative learning on COM-Ports are expected to become increasingly widespread.

**Keywords:** *Federated Learning, IoT, fNIRS and EEG, Data Privacy and Security*

# **Duolingo Dialogues: When chatbots become your language buddies, An analysis of the quality of interaction**

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Recent advances in artificial intelligence have paved the way for the development of educational chatbots, widely integrated into language learning platforms, one of the most popular ones being Duolingo, with over 500 million downloads of the mobile app.

These conversational agents promise the user the delivery of a personalized, interactive and accessible learning experience, becoming complementary to human interactions or even replacing the traditional way of learning a second language. Although proven efficient in keeping the user motivated and engaged enough to reach at least a basic level of knowledge in a second language, there is an ongoing debate about the authenticity, adaptability and empathy level of a chatbot.

This essay provides a comparative analysis of chatbot-based and human-mediated interactions in second language acquisition, with a particular focus on Duolingo and its new AI powered provided features ("Video call", "Explain my answer") within the Max subscription. The discussion highlights pedagogical, ethical and cultural implications, as well as the benefits and limitations of AI-mediated learning, arguing that the future of language education lies not in the complete replacement of human interaction, but rather in hybrid models that put in value the efficiency and accessibility of chatbots alongside the authenticity and complexity of human communication.

**Keywords:** *AI, Duolingo, educational chatbots, language learning, technology assisted learning, human-computer interactions, hybrid models*

# **AI for Anomaly Detection in Underwater Acoustic Sensor Networks for Early Warning Systems**

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UASNs are networks of sensors underwater that communicate through sound. They are used to detect important events and monitor marine environments. Although useful, sending data underwater can be slow and messy because there are a few challenges. Sound travels much more slowly in water than radio waves do in air, which introduces big communication delays. There is also a lot of noise because of the marine life, boats and waves which interfere with signals. The constant movement of the water causes node movement, resulting in frequent changes in connectivity. Underwater devices often have limited battery life, making maintenance challenging. These issues make detecting unusual events difficult. In this work, I will explore how AI detects anomalies in UASNs, helping the system identify deviations from normal patterns in early warning systems more reliably.

**Keywords:** *Underwater Acoustic Sensor Networks, Anomaly Detection, Artificial Intelligence, Early Warning Systems, Marine Monitoring*

# From individual to global scale: the impact of artificial intelligence on humanity and the future of human rights

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For centuries, humanity has been inventing technologies and exploring innovative ways to manage time more efficiently and improve our quality of life. From solving household tasks to tackling international issues, technological advancements have been applied across every field, driving progress in multiple directions. However, while these innovations bring undeniable benefits, they also come with potential risks and unintended consequences that demand careful consideration. A glance at history reveals this dual nature of innovation. The discovery of wood, for instance, was instrumental in providing warmth, shelter, and tools essential for survival. Yet, its prolonged exploitation led to deforestation and environmental degradation. Similarly, the invention of the compass in the Middle Ages revolutionized navigation, enabling sea voyages that boosted trade and exploration. But this same innovation also fueled colonialism, resource exploitation, and cultural displacement. In more recent times, the development of atomic energy represented a groundbreaking leap in energy production. However, it also introduced grave risks, such as nuclear weapons and the lingering threat of radiation. Today, the rise of artificial intelligence (AI) marks another transformative era, bringing revolutionary changes that affect individuals, communities, and global systems. AI technologies are enhancing productivity, enabling medical breakthroughs, and improving decision-making processes. Yet, alongside these benefits, they pose significant challenges. These include breaches of privacy, threats to data security, the proliferation of misinformation, cognitive dependency, and ethical dilemmas like accountability and regulation.

In this article, we aim to explore the impacts of AI on humanity, particularly on human behavior. The main purpose of the article is not only to examine the positive effects of AI but also to analyze whether it has negative impacts and assess potential risks. Geoffrey Hinton, the "father of AI," serves as a key reference, particularly his thesis: "For the first time in history, we are entering an era where beings smarter than us exist." The article analyzes the validity of this claim using Hinton's writings, interviews, and existing academic literature. It also discusses changes in human rights and the potential impacts of AI in this context.

**Keywords:** *Artificial Intelligence, Humanity, Human rights.*

# **From Soft Power to Algorithmic Power: How AI Is Reshaping Global Political Influence in the Digital Age**

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The advent of artificial intelligence in digital media ecosystems has triggered a profound restructuring of global political influence, marking a decisive shift from Joseph Nye's classical "soft power" – the ability to attract and persuade through culture, values, and narrative – to what this paper conceptualises as algorithmic power: the capacity of states, platforms, and non-state actors to shape mass perceptions, emotions, and political behaviour through AI-governed information flows, micro-targeting, and synthetic media generation.

In the contemporary digital environment, a small number of transnational platforms (TikTok/Baidu, Meta, Google/YouTube, X, and increasingly domestic alternatives such as VK and WeChat) function as the primary gatekeepers of political reality for more than five billion users. Their recommendation algorithms no longer merely amplify existing content; they actively construct personalised political realities by determining visibility, emotional framing, and behavioural nudging at unprecedented scale and speed. Simultaneously, the democratisation of generative AI – large language models, image synthesizers, voice cloning, and video deepfakes – has collapsed the cost and expertise required to produce highly convincing disinformation, enabling both sophisticated state campaigns and low-barrier asymmetric operations by non-state actors.

This paper contends that AI-driven digital media has become a new and decisive arena of global power competition, manifesting along two divergent trajectories. In open societies, algorithmic power operates primarily through privatised platform governance and commercial incentive structures, producing phenomena ranging from filter bubbles and polarisation spirals to the weaponisation of synthetic media in electoral contexts. The 2024–2025 election cycles in the United States, India, Indonesia, and the European Parliament elections witnessed an explosion of AI-generated fake audiovisual content that outpaced traditional fact-checking capacities and eroded public trust in democratic institutions. Conversely, authoritarian and hybrid regimes have integrated the same technologies into comprehensive systems of digital control. China's evolving ecosystem of real-time censorship algorithms, social-credit-linked content scoring, and generative-AI propaganda tools, increasingly exported via the Digital Silk Road, exemplifies how algorithmic power can be harnessed for preemptive narrative dominance and dissident suppression. Russia's sovereign internet infrastructure, Iran's use of domestic AI platforms for protest prediction, and Turkey's automated takedown systems illustrate parallel developments. These cases reveal a widening global

divide between models of democratic contestation – where algorithmic power remains fragmented among private actors and contested by civil society – and models of authoritarian consolidation, where the state seeks direct or indirect mastery over the algorithmic layer itself.

By introducing and theorising algorithmic power as both successor and radicaliser of soft power, this study bridges international relations and media studies to argue that control over training data, model architectures, content moderation systems, and infrastructure has emerged as a core component of 21st-century statecraft and geopolitical rivalry. The struggle is no longer simply about who tells the most attractive story, but who designs, owns, and governs the artificial systems that determine which stories billions of individuals encounter, internalise, and act upon. As global forums – from the UN's Global Digital Compact to Brussels–Beijing regulatory competition – attempt to establish norms for AI governance, the outcome will fundamentally shape the distribution of political influence for decades to come.

**Keywords:** *algorithmic power, soft power, artificial intelligence, digital media, information warfare, platform governance, digital authoritarianism, disinformation, global politics, AI governance.*

# **Hey AI, Do You Care? The Cognitive and Socio-Emotional Implications of AI Companionship in Youth Development**

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Nowadays, a common development that exists globally and rising rapidly is AI technology. Large language models (LLM) are increasingly used by people of all ages. Children are now born with a new companion, a third parent in the form of an AI chatbot, which has become an integral part of humans everyday lives. Children are increasingly using conversational AI chatbots for various purposes, including entertainment, education and even companionship or emotional expression, which raises significant consideration regarding their development. The main aim of this paper is to examine how adolescents interactions with AI conversational chats affect their cognitive and socio-emotional development. The focus of the research is how working memory as a temporary storage of information and attention are influenced by these chatbot interactions with children, as well as whether attachment to AI affects real-life empathy and social patterns. The study will use an empirical, quantitative design with a sample of adolescents aged 13 to 18. It is expected that attachment to AI interactions will be associated with poorer attentional and socio-emotional outcomes, particularly real-life empathy, while being linked to a positive or neutral cognitive outcome from a learning viewpoint. The results of the study will add discussions about possible effects of AI and child development, including both potential advantages and concerns, as well as appropriate inclusion of AI in the life of children.

**Keywords:** *AI Conversational Chatbots, Cognitive Development, Socio-emotional Development, Large language models (LLM).*





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