Artificial Intelligence: A Double-Edged Sword

Position of "Intelligent Humane Future" (I-HI) Think Tank, Skopje, on the Opportunities for the Humane Application of AI for the Accelerated Development of North Macedonia and Addressing Related Opportunities, Challenges, and Risks

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Abstract

Artificial Intelligence is a transformative force that holds immense potential for North Macedonia, yet it also presents risks and challenges. This document explores the delicate balance between AI-driven innovations and the socio-economic disruptions they may cause, highlighting some key positions that society can take, particularly in the presence of regulatory gaps.
Assessing these risks is crucial, and therefore, the document also illustrates key activities of I-HI Think Tank, Skopje, aimed at ensuring the humane implementation of AI.
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With this document, the I-HI Association actively engages in the public debate on the benefits of AI implementation and the ways to address the related challenges and risks.

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Introduction

Considering the undeniable **transformative potential** of Artificial Intelligence (AI) and the **pace of its integration** into various sectors, it can be concluded that we are witnessing a **new technological revolution**, often referred to as the **"Fourth Technological-Industrial Revolution."**

The benefits of AI application in **healthcare, financial management, education, transportation,** and other key sectors have been proven through significant improvements in efficiency, enabling the execution of complex tasks, data analysis with unprecedented speed, precision, and depth, and enhancing decision-making processes multiple times over.

AI has already become a **powerful market segment**, generating **numerous new economic opportunities.** According to the **McKinsey & Company (2023)[1] report**, AI in several high-tech fields could **contribute $23 trillion annually** to the global economy by **2030**, representing an **acceleration of global GDP by 1.2% per year.**

At the same time, the development of humanoid robotics with artificial intelligence is advancing rapidly. Leading companies such as **Tesla (Optimus), Boston Dynamics, Figure AI, and Agility Robotics** have announced that autonomous humanoid robots will become commercially available as early as the 2030s. These robots, powered by advanced AI systems, will be capable of performing physical tasks traditionally carried out by workers in industry, logistics, healthcare, and services. Industry leaders anticipate that humanoid robots will soon be employed in repetitive, dull, and hazardous tasks, reducing risks for human workers.

An analysis by Goldman Sachs (2023)[2] suggests that the global market for humanoid robots could reach $38 billion by 2035.

In the **same report**, the **cost of humanoid robots** is also discussed:

"The production cost of humanoid robots has decreased—from a range that last year was between approximately $50,000 (for simpler models) and $250,000 (for the most advanced versions) per unit, to a range of $30,000 to $150,000 at present. While our analysts expected a reduction of 15-20% per year, the price has actually dropped by 40%," the report states.

Many analysts are concerned that, initially, large corporations, followed by medium-sized and small businesses, will rapidly adopt humanoid robots in the medium term (15-20 years). The demand for these robots is expected to increase significantly, especially since they could have an effective work period of 18 to 20 hours per day (with the remaining 4-6 hours allocated for maintenance). Unlike human workers, these robots do not require vacation time or breaks, and social security and pension costs are nonexistent.

This shift is expected to trigger a new wave of automation, potentially reducing the demand for low-skilled workers while simultaneously creating demand for new job profiles, such as robot maintenance technicians, machine learning engineers, and AI security specialists. This transformation will require active reskilling policies and support for vulnerable workers to prevent mass unemployment and social tensions.

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[1] https://www.mckinsey.com/mgi/our-research/the-next-big-arenas-of-competition
[2] https://www.goldmansachs.com/insights/articles/the-global-market-for-robots-could-reach-38-billion-by-2035

The **above-mentioned trends** raise **critical concerns** about **the potential impact on the labor market and social inequalities.**

Given these **effects on the workforce**, **several models for active social policy interventions** are already being discussed globally. The **World Bank** published an **analysis in 2020[3]** regarding the idea of a **Universal Basic Income (UBI)**. *"Perspectives on Universal Basic Income depend on how severe the perceived threat from technology, automation, or artificial intelligence is, and consequently, how proportional or radical the policy response should be,"* the report states.

Furthermore, **many countries are already developing large-scale reskilling and education strategies** in collaboration with technology companies and academic institutions. According to the **MIT Work of the Future Initiative (2022)[4]**, investing in new educational programs for digital and technical skills could mitigate the risk of mass unemployment and facilitate faster workforce integration into emerging industries.

Additionally, tax reforms targeting automated industries, such as the **"Robot Tax"[5]** proposed by **Microsoft's owner, Bill Gates**, could create a **fund to support worker retraining and social protection**.

This dynamic is not automatically balanced—the lack of AI-related skills in the current workforce presents a challenge that could lead to increasing social inequality. According to the **MIT Work of the Future Initiative (2022)[6]**, the labor market is at risk of **"automation polarization"**—where highly educated workers with digital skills gain a significant advantage, while low-skilled professions become the most vulnerable.

According to estimates from the **World Economic Forum (WEF, 2023)[7]**, by **2025**, **85 million jobs** will be **replaced** by AI and automation, but at the same time, **97 million new jobs related to technology** will be **created**.

Furthermore, we are witnessing an **increased misuse of AI** to **shape reality and public political discourse[8]** by actors aiming to undermine democracy through **manipulating information flows, spreading disinformation, and targeted hate speech**. These tactics directly influence public opinion, paving the way for the creation of authoritarian governance systems. The risks of AI misuse also extend to threats to security and safety, from cyberattacks to various forms of terrorism.

On the other hand, the responsible and ethical application of AI strengthens democracy by enhancing the efficiency of mechanisms and tools for transparency and government accountability, while also empowering civic engagement.

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[3] https://documents1.worldbank.org/curated/en/993911574784667955/pdf/Exploring-Universal-Basic-Income-A-Guide-to-Navigating-Concepts-Evidence-and-Practices.pdf
[4] https://wp.workplaceinnovation.org/wp-content/uploads/sites/2/2020/08/MIT_2019_-_Work_of_the_Future_Report_Shaping_Technology_and_Institutions.pdf
[5] https://finance.yahoo.com/news/bill-gates-wants-tax-robots-233045575.html
[6] Low-Skill and High-Skill Automation: Daron Acemoglu Massachusetts Institute of Technology and Pascual Restrepo Boston University - https://economics.mit.edu/sites/default/files/2024-02/Automation%20and%20Polarization.pdf
[7] https://www.weforum.org/publications/the-future-of-jobs-report-2025/
[8] Social media platforms use algorithms that prioritize engagement over accuracy, contributing to political polarization and the rapid spread of false information. Additionally, deepfake technology and AI-driven political propaganda enable manipulation of public opinion, thereby threatening the integrity of democratic elections.

Artificial Intelligence: A "Revolutionary Sword" with Two Edges

While the **economic and societal potential** of AI is **immense**—spanning **science, research, art, and industry**—there are also serious risks associated with its misuse. We are already witnessing an exponential rise in disinformation and manipulation of information flows, which could undermine democratic values. As **UNESCO (2023) warns[9]**, AI-generated disinformation and deepfake technologies are already being used as tools for political manipulation, disrupting electoral processes, and amplifying hate speech.

In these areas, **I-HI Think Tank, Skopje**, firmly believes that AI development and application must be guided by policies that ensure humane and ethical use, equal access, and effective oversight to maximize benefits while minimizing risks. Accordingly, I-HI Think Tank, Skopje, advocates for a well-balanced regulatory framework that promotes AI-driven human development while protecting society from potential abuses with severe consequences.

Equally important is monitoring the impact of AI development on global politics, international relations, trade, and security. The current race for AI dominance is directly shaping the international balance of power, creating serious geopolitical tensions. Leading AI-developing nations such as the **United States, China, and the European Union** are investing massive resources in research, digital infrastructure, and policy incentives to secure their positions. According to the **Stanford AI Index Report (2023)[10]**, AI research and development funding in the U.S. exceeds $50 billion annually, while China aims for technological autonomy under its **"Made in China 2025"** strategy.

In this context, **I-HI Think Tank, Skopje, advocates for global cooperation and a productive and fair AI competition** that enables **shared technological breakthroughs**. The **benefits of AI** should be **distributed fairly to ensure global stability, peace, and collective prosperity**.

SUPPORTING ARGUMENTS AND RECOMMENDATIONS

Regarding the Increase of Efficiency and Accessibility in Public Service Delivery

I-HI Think Tank, Skopje, recommends:

- **Enhanced AI integration** to improve the efficiency of public service preparation and delivery by reducing administrative barriers and burdens and improving interactions between public institutions and citizens.
    - Public institutions should integrate inclusively designed AI-powered digital assistants that provide 24/7 user support, including for vulnerable and marginalized groups in society.
    - Public policies and budget planning in state institutions should prioritize AI implementation in public healthcare and education, enabling the adaptation of curricula to meet students' individual needs.

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[9] https://www.unesco.org/en/articles/artificial-intelligence-and-democracy;
https://unesdoc.unesco.org/ark:/48223/pf0000389736
[10] https://aiindex.stanford.edu/ai-index-report-2023/

- Additionally, AI implementation in urban management[11] should be supported as a priority, particularly in cities, focusing on:
  - Traffic management and the gradual inclusion of autonomous transport systems.
  - Strengthening public safety and environmental protection.
  - Ensuring ambient air quality and improving municipal services such as water supply, waste collection, public hygiene, and green space maintenance.
  - Anticipating and mitigating the negative impacts of climate change

Regarding Economic Challenges and Labor Market Issues:

I-HI Think Tank, Skopje, recommends:

- **Proactive monitoring** of **current and planned automation[12]** in various industrial sectors and the public sector by relevant state institutions to ensure timely planning of active measures for retraining and employment of workers who may lose their traditional jobs.

- **Effective reform of secondary education** to prepare students for employment in industries and certain public sector segments that rely on AI.

- **Upgrading university curricula and lifelong learning programs** to include qualifications in data management, digital process automation, robotics, cybersecurity, ethical AI application, and other fields that are aligned with the growing AI-driven industries and sectors.

- **Gradual and parallel development of AI applications** should be accompanied by long-term planning and implementation of social transfer reforms, ensuring a Universal Basic Income (UBI) for the population.

- **Conducting impact assessments** on the introduction of new technologies in work processes (especially General AI and robotics) and introducing gradual and harmonized implementation measures that align with the social status of the most vulnerable citizens.

- **Creating retraining and social protection funds**, sourced from a percentage of corporate savings generated through AI and robotics, particularly from reduced costs related to healthcare and social security contributions for human workers.

Regarding the Need for Humane and Ethical AI Implementation:

I-HI Think Tank, Skopje, recommends:

- **Ensuring transparency, inclusivity, and non-discrimination in AI development and application** to **prevent biased decision-making** based on flawed input data.

  - This recommendation primarily applies to public sector employment and service delivery, but it also ethically concerns employment and services in the private sector.

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[11] Implementation of the "Digital Twin" Approach and "Internet of Things (IoT) Infrastructure.
[12] A series of reference studies suggest that up to 30% of jobs in developed countries could be automated by 2030**.**

- o **Related recommendations:**

    - ▪ Develop ethical standards and best practices for AI use, ensuring that technology is applied without violating human rights, freedoms, and dignity.
    - ▪ AI implementation should reduce social inequalities rather than exacerbate them.
    - ▪ AI-powered tools should be as accessible as possible to vulnerable and marginalized groups in society.

- **Establish a politically independent regulatory body** to monitor AI implementation and prevent misuse while ensuring that innovation and private sector investment in AI development are not stifled.

    - o In this context, the dynamics of the preparation and adoption of EU regulatory solutions should be monitored, including the Digital Services Act, the Digital Markets Act, and the proposed AI Regulation[13], and efforts should be made to harmonize national[14] legislation accordingly.

- **Develop mechanisms to counter disinformation** in the fields of **freedom of expression, media literacy, and digital literacy**. **I-HI Think Tank, Skopje**, supports the recommendations from the latest Media Pluralism Assessment in the country, as well as those from the EU-supported media reform project (2023):

    - o **The media regulator should continue coordinating efforts** to promote media literacy, within the already developed and effective Media Literacy Network. A strategic document on this topic should be developed in the short term.

    - o **The Ministry of Education should integrate media literacy** into the national education transformation strategy, introducing new initiatives to help students detect disinformation and protect themselves from its impact.

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[13] Proposed AI Regulation of the EU: https://artificialintelligenceact.eu/

[14] North Macedonia already has laws that can sanction speech that violates other human rights, but it lacks mechanisms for their effective implementation and legal solutions that address the root causes of the disinformation problem. The existing solutions do not have a preventive or proactive role.

Although the National Security Strategy recognizes and addresses disinformation as a security issue, the document still lacks a government action plan for implementation that would address the individual causes of the impact of disinformation and information operations. For instance, it does not adequately cover coordinated and inauthentic social media actions or information operations carried out through social media platforms. (IMA.mk, 2025)

Our country is yet to undertake work to harmonize domestic legislation with these new regulations. This process was expected to begin in 2023, when an independent expert team developed analyses and provided a series of recommendations and proposals for changes to media and other laws. However, the amendments in July 2023 were limited to the delayed harmonization with the 2018 Audiovisual Media Services Directive. (Dr. Snežana Trpeska, RESIS Institute)

The role of "trusted markers" in protecting against disinformation and other harmful content on social networks is crucial, and efforts to develop effective frameworks are needed to mitigate these threats.

- The Ministry of Education, in collaboration with civil society organizations and the private sector, should design and implement a free media and digital literacy program for different age groups, including vulnerable citizens.

- Civil society organizations should continue their efforts to promote critical awareness and media literacy skills for all population groups.

- **AI should be applied in a manner that ensures data privacy**, in compliance with existing national regulations, which should also be upgraded and harmonized with the EU's General Data Protection Regulation (GDPR).

  - This recommendation applies to AI-driven surveillance, facial recognition technologies, and data collection practices in public spaces. Exceptions should be limited to security and public safety concerns explicitly regulated by law.

> Civil society, the government, academia, the private sector, and the media must collaborate to ensure that AI is used in a humane, purposeful, and responsible manner.
>
> A well-balanced legal framework, combined with enhanced public awareness and a willingness to establish productive partnerships and cooperation, will help harness the immense potential of AI while simultaneously protecting human rights and democratic values.

I-HI ACTIVITIES FOR HUMANE AI IMPLEMENTATION

Building on the experience and expertise of its members, as well as its access to national and international AI experts, **I-HI Think Tank** aims to position itself as a nonprofit research and analytical center dedicated to the humane implementation of AI.

I-HI Think Tank, Skopje, plans to independently—or in partnership with other organizations— mobilize resources to conduct a comprehensive, integrated analysis and engage civil society in the development of an independent, nonpartisan strategy for humane AI implementation, addressing related risks and challenges in the country, along with a relevant legal framework.

The focus of this analysis will be on:

- **The current legal and policy framework** in North Macedonia for AI applications (e.g., economic development programs, education, healthcare, human rights and freedoms, media, social protection, transportation, public services, intellectual property, etc.).

- **General AI development trends**, including a comparative analysis of regulatory solutions and policies in the EU, USA[15], and other leading countries in AI development and implementation, as well as relevant international organizations.

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[15] The **American Medical Association (AMA)** has developed **policies that guide the development and implementation of AI in healthcare**, focusing on key areas such as healthcare oversight, transparency in AI usage for physicians and patients, governance and policies for generative artificial intelligence, physician

I-HI's Think -Tank, Skopje, Contribution and Partnerships

I-HI Think Tank plans to **contribute to and develop partnerships** for initiatives aligned with its mission and objectives, including:

- **Organizing events and public debates** on AI's potential and its impact on key societal trends.

- **Designing and leading a broad public awareness campaign**, utilizing communication products to strengthen public knowledge on AI-related issues.

- **Organizing and participating in professional and scientific seminars** focused on AI-related policy and implementation issues.

- **Proposing measures and activities** to **government institutions and policymakers** to improve AI-related regulations and policies, while also monitoring their implementation through a civil society watchdog function.

- **Creating collaboration avenues** between the public, private, academic, and civil sectors on topics and issues relevant to humane AI development.

- **Organizing and conducting training programs** to develop capacities related to humane AI application.

- **Establishing cooperation, memberships, and networks** with other national and international organizations working on similar AI-related challenges.

- **Lobbying for international agreements and regulations** that protect human rights and freedoms in the context of rapid technological advancements, including General Artificial Intelligence (GAI), ensuring AI's positive influence on global stability, peace, sustainable development, and prosperity.

I-HI Think Tank – Where AI Serves Humanity!

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accountability when using AI-powered tools, data privacy and cybersecurity, and the role of AI in insurance decision-making (https://trn.mk/kakva-e-idninata-na-veshtachkata-inteligenczi%D1%98a-vo-mediczinata/)