

Kazarian A.S.

Student

Scientific Advisor: Kurbakova M.A.

Candidate of Philology, Associate Professor

Moscow Polytechnic University

Russia, Moscow

AUGMENTED INTELLIGENCE: RESEARCH ON THE EFFECTIVENESS OF COLLABORATION BETWEEN HUMANS AND ARTIFICIAL INTELLIGENCE

Abstract. Artificial intelligence remains in its early stages of recognition among people. This paper covers the concept of augmented intelligence as a way to prevent human replacement by machines and achieve a beneficial partnership between them.

Keywords: artificial intelligence; augmented intelligence; decision-making; education reforms; ethics; human-AI collaboration; job polarization.

Human intelligence and artificial intelligence (AI) together form another term – augmented intelligence (AugI). AugI combines the strengths of AI and the judgment of humans in a way that complements each other for faster, more effective work.

AugI emerges from the synergistic integration of human cognition and AI systems. This partnership strategically combines computational advantages of AI — speed, accuracy, data processing capacity — with uniquely human strengths in judgment, contextual understanding and ethical reasoning [4]. The resulting collaborative dynamic enables superior outcomes across various domains, particularly in medical diagnostics and recruitment processes.

The benefits of human-AI collaboration include enhanced problem-solving capabilities, 24/7 operational efficiency and creative synergy — the latter combines machine precision with human ingenuity. AI excels at processing vast datasets to identify patterns, while humans contribute ethical reasoning and contextual judgment. The most critical feature is that these systems are designed to be objective and not subjective, reducing bias and ensuring fairness.

When operating jointly, AI and human intelligence lead to better results than either could achieve alone. This technology supports human decision-making by processing large datasets, reducing errors and automating routine decisions [3].

A compelling demonstration of AugI comes from the clinical study. A study assessed the capacity of AI to support physician analysis. The research involved 15 physicians. Non-radiologist practitioners with AI support achieved diagnostic accuracy scores of 0.9 AUC-ROC, matching the performance of certified radiologists working without AI support [1]. This effect suggests AI can democratize expertise, enabling general practitioners to perform at specialist levels in specific tasks. The findings demonstrate optimal AugI implementation: AI enhances clinician capabilities while preserving physician judgment, requiring domain-specific expertise and comprehensive patient evaluation.

Both AI and AugI systems fundamentally rely on core technological components (e.g., machine learning algorithms, natural language processing capabilities, predictive analytical models). However, their operational philosophies differ significantly: AI seeks to replicate human cognitive functions, whereas AugI strategically enhances human capabilities by automating repetitive tasks while maintaining human oversight. This critical distinction becomes apparent in their applications. Rather than viewing AI as a replacement technology, companies should prioritize AugI implementations that synergize technological capabilities with human strengths. Augmented collaboration, not artificial autonomy, should define intelligent systems — enhancing human potential without replacing it. The differences between AI and AugI concepts are systematized in the Table.

However, such collaboration is limited by significant issues, particularly high implementation costs and data dependency. Moreover, overreliance on AI systems risks eroding

human critical thinking capacities.

Table

The core differences between AI and AugI systems

Aspect	Artificial intelligence	Augmented intelligence
Primary objective	Autonomy via cognition replication	Human capability amplification
Human involvement	Limited	Integral
System output	Fully automated decisions	Collaborative human-AI solutions

According to the World Economic Forum, the integration of Artificial Intelligence into the workforce is expected to globally disrupt 85 million existing jobs while generating 97 million new ones by 2025, affecting medium and large businesses across 15 industries and 26 economies [6]. The emphasis will be on skills essential for human constant learning. Emerging roles like "AI Trainer" highlight the demand for advanced technical, adaptive skills. Without proactive measures (e.g., education reforms, upskilling programs) this polarization threatens to weaken the middle class, resulting in a socioeconomic gap with appropriate consequences.

Human-AI collaboration drives superior technological solutions by merging machine scalability with human ingenuity. While AI excels in data-driven, repetitive tasks, it cannot replicate human judgment or ethical reasoning.

Based on this, the following conclusions were made:

1. AI cannot fully replace humans in roles requiring high levels of creativity, ethics or complex decision-making. For instance, in healthcare, AI assists in diagnostics by analyzing medical data, but doctors finalize treatments based on patient context (i.e., the final decision is upon a human).
2. New professions are emerging to support collaboration between humans and AI. Roles such as "AI Trainer", which involve teaching systems to align with human values, are becoming increasingly essential. These roles ensure that AI systems complement human strengths, providing a balanced and effective partnership rather than replacing them.

References

1. AI vs Radiologists: Performance on Chest X-Rays // 2019. URL: <https://www.clearvuehealth.com/b/ai-radiology-xray/> (accessed 28.03.2025)
2. Augmented Intelligence / Abayomi Ajayi-Majebi, Tolulope Joshua Ashaolu, Sarhan M. Musa, Matthew N. O. Sadiku, 2021.
3. Augmented Intelligence: Human-AI Collaboration in the Era of Digital Transformation / Shreekant Mandvikar, Deep Manishkumar Dave, 2023.
4. Augmented intelligence for Open Education: Bridging the Digital Gap with Inclusive Design Methods / Inés Alvarez-Icazal, Omar Huerta, 2024
5. Augmented Intelligence. The Business Power of Human–Machine Collaboration / Judith Hurwitz, Henry Morris, Candace Sidner, Daniel Kirsch, 2019. 170 p.
6. Amanda Russo. Recession and Automation Changes Our Future of Work // World Economic Forum. 2020. URL: <https://www.weforum.org/press/2020/10/recession-and-automation-changes-our-future-of-work-but-there-are-jobs-coming-report-says-52c5162fce/> (accessed 13.05.2025)