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THE IMPACT OF AI TOOLS ON IT PROFESSIONALS' COMPETENCIES: CHALLENGES FOR HIGHER EDUCATION

Just a few years ago, tools like ChatGPT and GitHub Copilot seemed like something out of science fiction. Today, 85% of Ukrainian IT professionals use AI in their daily work, with 45% turning to it every day or nearly every day (DOU, 2024). This is no longer a trend — it is a reality that is fundamentally changing what it means to be an IT professional. And this raises an uncomfortable question: is higher education keeping up with these changes?

The aim of this paper is to examine how AI tools are transforming the competency structure of IT professionals and what this means for university education.

Let us start with the numbers. According to the Stack Overflow Developer Survey (2024), 63.2% of professional developers worldwide are already using AI tools at work, with another 13.5% planning to start soon. The World Economic Forum projects that by 2030, 39% of workers' core skills will change as a result of new technologies (World Economic Forum, 2025). This is a staggering figure — it means that nearly four in ten skills taught in technical universities today may become outdated within the decade.

The paradox is that AI both helps and hinders professional development at the same time. On the one hand, productivity genuinely improves. A controlled study by Peng et al. (2023) found that developers using GitHub Copilot completed tasks 55.8% faster than the control group. That is remarkable. On the other hand, when a tool constantly generates ready-made code, there is a real risk that the developer stops understanding why the code works the way it does. That becomes a serious problem when something goes wrong and independent troubleshooting is required (Computools, 2025).

For higher education, this is a particularly difficult issue. A student who learns 'alongside AI' may complete every assignment — and still learn nothing fundamental. UNESCO is clear on this point: universities must develop not only technical skills but also critical thinking and an understanding of when AI can be trusted and when it cannot (Miao & Holmes, 2023). Androshchuk and Maliuha (2024, p. 30), examining Ukrainian universities, reach a sobering conclusion: most educational programmes currently treat AI as an optional add-on rather than embedding it as a core element of professional training.

Three main challenges can be identified for higher education institutions. First, curricula must be updated not around specific tools — which change too quickly — but around meta-skills: the ability to formulate tasks for AI, evaluate its outputs critically, and understand its limitations. Second, academic integrity. Where is the line between 'using AI as a tool' and 'letting AI think instead of me'? This question currently has no clear answer in Ukrainian or most other universities worldwide. Third, faculty readiness. Only a lecturer who genuinely understands the capabilities and limitations of AI tools can teach students to work with them critically.

In short, the labour market is already living in an AI reality, while education — in many places — is not quite there yet. This does not mean tearing everything down and starting over. But it does mean that higher education institutions need to answer an honest question: are we training professionals who can think alongside AI, or just those who know how to run it? A promising direction for future research is the development of concrete models for integrating AI competencies into IT degree programmes at Ukrainian universities.

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INTELLECTUAL PROPERTY PROTECTION IN THE ERA OF DIGITAL ENGINEERING AND INNOVATION

The current stage of global civilization, marked by the transition to the Industry 5.0 concept, is accompanied by a fundamental transformation of engineering, economic, and legal processes. In the context of total digitalization, intellectual property (IP) ceases to be a merely formal legal category and evolves into a strategic intangible asset that determines the competitiveness of business entities in the global market. The rapid implementation of cyber-physical systems, cloud design technologies, and complex software suites creates a situation where the speed of technological diffusion significantly outpaces the dynamics of regulatory institution adaptation, giving rise to acute legal collisions and global challenges for the protection of creative activity results (Didenko L., et al. 2024) (Bedratyi I., et al. 2025) (OECD, 2022).

This transformation primarily concerns the very nature of an engineering invention. In the era of digital engineering, intellectual property objects increasingly exist in the form of complex virtual structures, such as Digital Twins. These models,