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The ethical perception of AI-generated assignments among hungarian informatics students

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Abstract: Generative AI has rapidly entered student workflows, yet ethical norms around assignment submission remain unsettled. To explore these perceptions in a local context, we conducted a survey among Computer Science and Business Informatics students at a Hungarian university. This study is embedded in the broader research project “We Are Not Afraid of the Wolf!”, which examines Hungarian informatics students’ attitudes toward generative AI in programming education. The project investigates how students balance efficiency gains with concerns about reliability, skill development, and labor market impact, and it has shown that most students see AI as a tool rather than a competitor, while stronger programmers tend to review and debug AI-generated code more critically. We studied the following hypothesis: Students with stronger programming skills are less likely to view submitting AI-generated assignments as ethical than students with weaker skills.

We collected responses from 71 students. Programming proficiency was proxied by the Programming 2 lecture grade (on a 2–5 scale). Ethical acceptance was measured on Likert scales by three items: (1) acceptance of using AI-generated code in assignments; (2) acceptance of submitting exclusively AI-generated code as one’s own; and (3) importance of disclosing AI-generated code (interpreted inversely as lower ethical acceptance when disclosure is deemed more important). Spearman correlations were applied in this exploratory stage without additional data cleaning.

Ethical acceptance of AI use in assignments showed a small, non-significant negative association with proficiency ($r = -0.15$, $p = 0.24$). Acceptance of submitting exclusively AI-generated code was moderately and significantly lower among stronger programmers ($r = -0.27$, $p = 0.032$). The disclosure item trended oppositely and was not significant ($r = +0.20$, $p = 0.12$).

So, we can say, that stronger programming skills are linked to stricter ethical judgments against “pure AI” submissions, while views on mixed use and disclosure are more diverse. Although our study is limited to one Hungarian institution, the full anonymized dataset is openly available at Zenodo, enabling verification and further exploration of our findings by other researchers. As part of the “We Are Not Afraid of the Wolf!” project, these findings enrich a multi-instrument evidence base on how students negotiate ethics, learning, and employability in the age of generative AI.

Keywords: student attitudes toward AI, AI ethics, AI in programming education

Az AI által generált beadandók etikai megítélése magyar informatikushallgatók körében

Absztrakt: A generatív mesterséges intelligencia gyorsan beépült a hallgatói munkafolyamatokba, mégis a beadandó feladatok etikai normái továbbra sem tisztázottak. Hogy ezeket a felfogásokat helyi kontextusban vizsgáljuk, felmérést végeztünk egy magyar egyetem informatika és üzleti informatika szakos hallgatói körében. Ez a tanulmány a „Nem félünk a farkastól!” című tágabb kutatási projektbe ágyazódik, amely a magyar informatika szakos hallgatók a generatív mesterséges intelligenciával kapcsolatos attitűdjeit vizsgálja a programozásoktatásban. A projekt azt vizsgálja, hogy a hallgatók hogyan egyensúlyoznak a hatékonyságnövekedés és a megbízhatósággal, a készségfejlesztéssel és a munkaerőpiacra gyakorolt hatásokkal kapcsolatos aggodalmak között, és kimutatta, hogy a legtöbb hallgató a mesterséges intelligenciát inkább eszköznek, mint versenytársnak tekinti, míg a jobb programozók hajlamosabbak kritikusabban áttekinteni és hibakeresni a mesterséges intelligencia által generált kódot.

A következő hipotézist vizsgáltuk: Az erősebb programozási készségekkel rendelkező hallgatók kisebb valószínűséggel tartják etikusnak a mesterséges intelligencia által generált feladatok beadását, mint a gyengébb készségekkel rendelkező hallgatók.

Összesen 71 hallgatótól gyűjtöttünk válaszokat. A programozási jártasságot a Programozás 2 előadás érdemjegye (2–5 skálán) mérte. Az etikai elfogadottságot Likert-skálán három tétellel mértük: (1) a mesterséges intelligencia által generált kód használatának elfogadása a feladatokban; (2) a kizárólag MI által generált kód sajátként való benyújtásának elfogadása; és (3) a MI által generált kód nyilvánosságra hozatalának fontossága (fordítva értelmezve alacsonyabb etikai elfogadottságként, amikor a nyilvánosságra hozatalt fontosabbnak ítélik). Spearman-korrelációkat alkalmaztunk ebben a feltáró szakaszban további adattisztítás nélkül.

Az MI használatának etikai elfogadottsága a feladatokban kismértékű, nem szignifikáns negatív összefüggést mutatott a jártassággal ($r = -0,15$, $p = 0,24$). A kizárólag MI által generált kód benyújtásának elfogadottsága mérsékelten és szignifikánsan alacsonyabb volt az erősebb programozók körében ($r = -0,27$, $p = 0,032$). A nyilvánosságra hozatalra vonatkozó tétel ellentétesen alakult, és nem volt szignifikáns ($r = +0,20$, $p = 0,12$).

Ezek alapján, azt mondhatjuk, hogy a jobb programozási készségek szigorúbb etikai ítéletekkel járnak együtt a „tisztán MI” beküldésekkel szemben, míg a vegyes használat és a nyilvánosságra hozatallal kapcsolatos nézetek változatosabbak. Bár tanulmányunk egyetlen magyar intézményre korlátozódik, a teljes anonimizált adatkészlet nyíltan elérhető a Zenodo-n, lehetővé téve eredményeink ellenőrzését és további feltárását más kutatók számára. A „Nem félünk a farkastól!” projekt részeként ezek az eredmények egy több eszközön alapuló bizonyítékbázist gazdagítanak arról, hogy a diákok hogyan tárgyalnak az etikáról, a tanulásról és a foglalkoztathatóságról a generatív mesterséges intelligencia korában.

Kulcsszavak: hallgatói attitűdök MI irányában, MI etika, MI a programozás oktatásában

1 Introduction

Generative artificial intelligence (GenAI), such as large language models and code-generating assistants, has exploded in popularity in higher education in recent years. These technologies are not only transforming teaching methodologies, but also raising new ethical and pedagogical questions: how can they be used in a way that does not undermine student autonomy, creative processes, and skill development?

In Hungary, the question of how students relate to AI-generated assignments has become particularly prominent in basic IT and business IT training: do they view them as tools, assistants or competitors? This study examines

the extent to which students accept the use of AI tools, especially "entirely AI-generated" code submission, and how this relates to the individual's programming skills.

GenAI tools, for example in code generation, assignment writing, and modular programming tasks, make faster and "ready-made" solutions increasingly accessible to students. At the same time, this speed can potentially come at the expense of skill development and raises questions about the creative process, assessability, and the role of the learner. The issue of autonomy deserves special attention: the extent to which students remain active participants in their own learning and are not merely passive consumers of an AI-ready product.

In this context, the study of student attitudes focuses on how ethical they consider AI-generated assignments to be, both in terms of partial use and exclusive AI submission, and how they relate to this based on their own programming skills.

The hypothesis formulated in the article is that students with stronger programming skills are less likely to consider AI-generated assignments ethical than students with weaker skills.

2 Literature review

The emergence of generative artificial intelligence (GenAI) in programming education has been one of the most significant turning points of the past two years. Initial research focused on technological possibilities and increased student productivity, but it soon became clear that ethical, cognitive, and pedagogical implications were at least as important (Williams, 2024).

International research shows that large language models (LLMs) such as ChatGPT and GitHub Copilot offer new types of support for learning programming: code generation, error correction and explanations. Early studies of Copilot (Vaithilingam et al., 2022) have shown that students complete tasks faster, but identifying and correcting errors in the generated code is more difficult. 's AlphaCode experiments (Li et al., 2022) and ChatGPT-based educational pilots (Kasneci et al., 2023) have reached similar conclusions: generative models can increase efficiency in the short term, but they can weaken analytical thinking and algorithmic autonomy.

Meta-analytical reviews (Strunk, 2025) suggest that GenAI improves performance in the short term, but autonomy and evaluation transparency remain problematic. Several studies highlight that students appreciate the speed and convenience of AI tools but have mixed feelings about ethical boundaries (Benke, 2024).

Another area of research focuses on academic integrity. Plagiarism detection studies have shown that it is difficult to clearly distinguish between student-generated and AI-generated code in programming courses, raising new challenges for regulation and instructional design. The ethical dilemmas of AI-based education are thus increasingly focused on responsible use and transparency in the learning process.

The use of AI tools in higher education raises a number of ethical issues: data protection, transparency, copyright, algorithmic bias, autonomy and student engagement (García-López, 2025). Another review points out that students' excessive dependence on Gen AI may reduce their critical thinking and analytical skills (Zhai, 2024). When examining attitudes, the student perspective is key: for example, in one study, 2,555 students responded to questions about how they view Gen AI and its ethical implications (Johnston, 2024). This layer of attitudes is particularly relevant when examining the level of programming proficiency in parallel with the acceptance of AI-generated code.

Among domestic research, we would like to highlight the research project "We are not afraid of the wolf!" research project (Kusper, 2025), which analyses the fears of computer science students regarding whether generative artificial intelligence (Gen AI) will negatively affect the future labour market opportunities of current students. This article is a continuation of that project.

There is little empirical research available in Hungary that specifically examines the triple relationship between Gen AI use, ethics and education. At the same time, based on international results, domestic institutions are also gradually responding to the emergence of AI tools, for example by developing regulations and ethical guidelines. In Hungarian IT education, the question of how students relate to AI-generated code has come to the fore: do they see it as a tool or rather as a competitor (Kusper, 2025)? Taking into account data from such projects in Hungary, this study examines the attitudes of students with stronger and weaker programming skills, thus filling a gap in domestic research.

3 Results

A total of 71 students participated in the study, all of whom were enrolled in the bachelor's programme in computer science and business informatics at Eszterházy Károly Catholic University. Programming skills were represented by the grade for the Programming 2 course, on a scale of 2 to 5. Ethical acceptance was measured by three Likert scale items:

1. Acceptability of using AI-generated code in assignments.
2. Acceptability of submitting code generated exclusively by AI as one's own work.
3. The importance of disclosing AI-generated code (interpreted in reverse, i.e. a higher value indicates lower ethical acceptance).

Of the three ethical dimensions included in the questionnaire, two focused on the acceptance of AI use and one on transparency. Statistical analysis was performed using Spearman's correlation, examining bivariate relationships between ethical judgements and programming proficiency. The analysis was exploratory in nature and was performed without further data cleaning.

There was a weak, non-significant negative correlation between the acceptance of AI use in assignments and programming proficiency ($r = -0.15$, $p = 0.24$).

The acceptance of submitting code generated purely by AI as one's own showed a moderate, significant negative correlation ($r = -0.27$, $p = 0.032$). This means that students with better programming skills are less likely to consider it ethical to submit assignments created solely by AI.

In contrast, the importance of disclosing AI code showed a weak, positive, non-significant correlation ($r = +0.20$, $p = 0.12$), suggesting that better programmers consider transparency to be somewhat more important, but this correlation is not statistically significant.

The direction and strength of the correlations show a clear trend: the higher the programming proficiency, the stricter the ethical judgement regarding submissions generated entirely by AI.

Thus, the results confirm the research hypothesis: students with stronger programming skills are less likely to consider AI-generated assignments ethical than students with weaker skills.

The majority of students participating in the study view AI as a tool rather than a competitor, which is consistent with previous research and earlier publications on the project. However, better programmers are more critical of solutions generated exclusively by AI and consider partial, supplementary use to be more acceptable.

The results also indicate that programming proficiency can be interpreted not only as a technical factor but also as an ethical awareness factor. Students who are more confident in their own skills are likely to place greater emphasis on creative responsibility and transparency.

The results have significant pedagogical implications:

- Transparency and attribution: It is important that students receive clear guidance on the ethical use of AI tools in education, particularly in the areas of code disclosure and attribution.
- Task redesign: Assessment systems need to adapt to the era of generative AI – for example, by introducing more complex, personalised, reflective or cooperative tasks.
- Developing ethical awareness: Ethical reflection should be integrated into programming education so that students use AI tools responsibly, not only technically but also morally.

The anonymised dataset from the study is openly available in the Zenodo repository: <https://zenodo.org/records/17013486>

The research team is planning a second wave of the survey in the future, with a larger sample size and the inclusion of more levels of education (e.g., master's students). This will allow for a more accurate analysis of changes over time and the effects of educational background.

4 Summary and future plans

The research confirmed that there is a demonstrable link between students' programming skills and their ethical assessment of AI-generated assignments: more confident programmers are more critical of assignments that are entirely produced by artificial intelligence. This suggests that technical competence goes hand in hand with increased ethical awareness, particularly in matters of learning responsibility and creative autonomy.

Based on our findings, two main lessons can be drawn for higher education. On the one hand, there is a need for transparent guidelines regulating the use of AI tools that strike a balance between innovation and academic integrity. On the other hand, ethical reflection in programming education needs to be strengthened so that students are able to make conscious and responsible decisions when using AI tools.

Our future research will continue in several directions. In the short term, our goal is to expand the sample to other Hungarian and foreign universities, including master's students, to enable international comparisons. In addition, through longitudinal data collection, we intend to examine how student attitudes change with the development of AI tools and the regulatory environment.

As part of the "We are not afraid of the wolf!" project, we are planning further studies to gain a deeper understanding of how students interpret the relationship between ethics, learning and autonomy in the AI era. In the longer term, our goal is to develop ethical and pedagogical recommendations that support the responsible integration of AI tools into IT training.

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