34. TECHNICAL BALANCE: SOFTWARE ENGINEERS AND ARTIFICIAL INTELLIGENCE

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This paper explores the possibility of replacing programmers and software engineers with artificial intelligence. It presents an independent study of the topic, based on the Internet articles and video materials, and outlines the reasons why artificial intelligence cannot fully replace programmers.

Over the past few years, Artificial Intelligence (AI) has evolved dramatically, emerging as a powerful technology capable of processing and utilizing enormous volumes of data. Nonetheless, programming remains an art that demands inventiveness, teamwork, and intricate problem-solving capabilities – traits that today's AI systems largely lack, confining them mostly to repetitive or predictable tasks [1].

Certain programming challenges still lie outside the reach of technological automation. Software development involves much more than merely writing code; it encompasses identifying system issues, debugging, thorough testing, and continuous refinement. Although neural networks can generate portions of the code, these outputs frequently come with errors. As a result, experienced programmers must review and polish AI-produced code, ensuring its proper functionality and reliability. Moreover, the broader process of creating robust software requires accountability and ethical insight, qualities that are inherently absent in AI. This limitation is especially evident when tackling complex or non-standard problems in commercial environments [2].

At the same time, the effective collaboration between AI and human expertise can significantly boost productivity. AI's prowess in handling simple, monotonous tasks enables developers to channel their efforts towards designing innovative and complex software structures, such as core architecture and advanced features. By entrusting routine operations to AI, the overall workflow is optimized, paving the way for a more dynamic and efficient development process.

It is equally important to recognize the evolving role of programmers in the AI era. Rather than replacing skilled professionals, AI should be regarded as a supplemental tool that lightens the burden of mundane tasks while enhancing the efficiency of software creation. Although AI excels at automating routine functions and executing predefined algorithms, the intuitive understanding, creative problem solving, and deep analytical thinking necessary for advanced programming remain exclusively human domains.

A clear example of this harmonious human–machine interaction is illustrated by the Cursor AI code editor [3]. This innovative environment embeds advanced AI models within its framework, effectively extending the capabilities of traditional programming tools. Acting as a comprehensive assistant, it automates code completion, offers strategic solutions for task implementation, and supplies ongoing support throughout the development cycle. This integration vividly demonstrates how human creativity and AI efficiency can come together to streamline workflows and simplify sophisticated coding challenges.

In summary, the inherent adaptability and broad insight of human programmers ensure they remain at the forefront of technological innovation, playing a key role in in designing, developing, and implementing technology solutions. By partnering with AI, developers continue to steer progress with strategic vision, guiding the entire product development process while maintaining uncompromised ethical and quality standards.

References:

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