

Using Artificial Intelligence at Work – The Engineers' Perspective

By Jose Joskowicz and Daniel Slomovitz

The latest advances in generative Artificial Intelligence (AI) have had a great impact in various industries and sectors. This is notably the case in the field of engineering, where professionals are incorporating AI tools into their daily practices. Managers must not only know their potential, but also the degree of acceptance by their employees. Consequently, the challenge is how leaders promote these technologies so that they are adopted by the engineers responsible for their implementation. A recent [survey](#) therefore explored the vision of electrical and computer engineers regarding the impact they estimate that AI will have on their jobs. The survey focused on engineers and students of electricity, electronics, and computer science. The questionnaire covered demographic information, AI knowledge levels, preferred tools, primary applications, perceived impact, and attitudes toward labor substitution. With endorsements from IEEE Uruguay Section and IEEE Region 9, the survey reached 375 participants from 20 countries across the Americas. Here are some key findings and their implications.

AI Knowledge and Usage

According to the survey, 79 % of engineers reported medium or low level of knowledge of Generative AI tools. Interestingly, age was not correlated with level of knowledge. Nevertheless, even with these low levels of knowledge, a significant 69 % of participants have used AI tools at work in the last six months, with a notable 85 % adoption rate among respondents under 30 years old.

Types and Applications of AI Tools

ChatGPT was the most popular tool (89 %). Other tools were Dall-E (21 %) and Midjourney (16 %). The most applications of AI tools were text generation (61 %), general information search (57 %), text revision (42 %), data analysis (38 %) and software code creation (37 %).

Impact on Work and Future Perspectives

An overwhelming 79 % of respondents reported positive impact on their work. Only 0.4 % indicated that the impact at their work has been negative, while none expressed “very negative”. However, 15 % expressed concerns about job security due to AI.

Insights and Recommendations for Leaders

Engineers and students still have low AI technical level of knowledge, but they have a widespread level of adoption. Managers should know that, even with no specific directives regarding the use of Generative AI tools, the engineering staff are probably using some of them, even with a low level of knowledge. Corporate policies and training must be considered. As AI does not always provide accurate information, managers should promote awareness regarding the proper utilization and their potential problems. General optimism about the future of AI in engineering jobs can be used to promote these tools in organizations. Nevertheless, a non-negligible number of respondents had concerns about the impact of these technologies in their jobs. Plans regarding the introduction of AI into the workplace must take this into account.

Engineering leaders must actively embrace AI adoption, tailoring training to varied expertise among engineers, covering effective use, limitations, and ethical aspects of AI tools. Open communication should be cultivated for employees to voice AI-related concerns, particularly about job security and role changes. Leaders should also strategically select which AI tools to use, aligned with corporate policies. Crucially, while leveraging AI for efficiency and innovation, the emphasis on human creativity, problem-solving, and design in engineering must be maintained.

Digging Deeper:

- Jose Joskowicz and Daniel Slomovitz (2023) “[Engineers’ Perspectives on the Use of Generative Artificial Intelligence Tools in the Workplace](#)”, Engineering Management Review. DOI: 10.1109/EMR.2023.3333794.
 - Lane, M., M. Williams and S. Broecke (2023), “[The impact of AI on the workplace: Main findings from the OECD AI surveys of employers and workers](#)”, OECD Social, Employment and Migration Working Papers, No. 288, OECD Publishing, Paris.
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About the Authors

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