AI Assists for Engineers

Artificial intelligence has gotten a lot of recent attention for its use in art, but it promises to have a much larger effect in the engineering world.

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Over the past year or so, tools such as ChatGPT and Midjourney have provided public access to powerful artificial intelligence tools to create text and images. The results so far have been mixed. Due to the way the AI tools "learn" from existing data, those programs can provide superficially stunning results that falter on details such as the number of fingers on the human hand.

Less showy but more impactful are the ways AI can help engineers. Already, generative AI tools have been used for design, but as a recent report from McKinsey points out, generative AI can provide value throughout the operations of engineering firms. Here are five examples of ways AI will help engineers in the near future.

1. GENERATIVE DESIGN

Generative design is an iterative design exploration process that generates a range of design solutions from a set of parameters. Each solution is assessed for its success in meeting the goals of the product, and then new solutions are spawned from the most successful ones. The process continues until an optimal design is reached. Unlike traditional design, the process is not based on an engineer's knowledge.
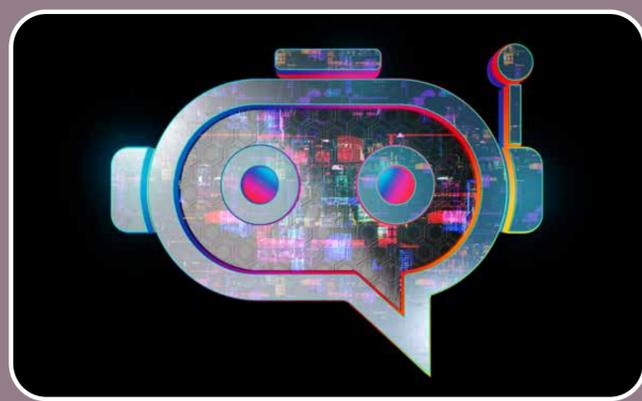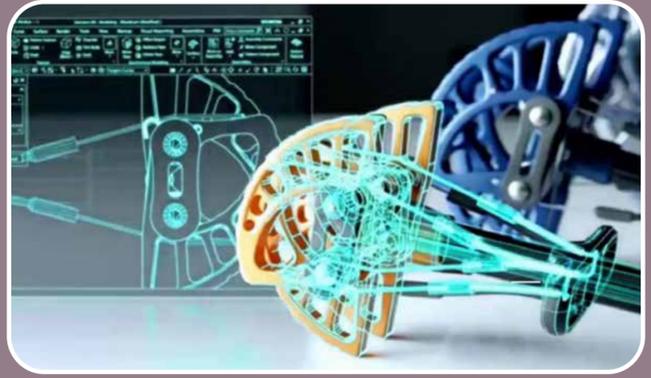
2. SOFTWARE AND DOCUMENTATION

One area that AI chatbots have been able to perform well is in writing code for software applications. Engineers who need to write software or who need to generate synthetic data for testing purposes will be able to perform these tasks faster using AI. AI assistance that looks for contextual clues could also help fill out forms and data tables more quickly.

3. OPERATIONS AND CUSTOMER SUPPORT

Customer support chatbots are already being used to resolve questions about products, but generative AI could soon write instruction manuals and work with customers to optimize their use of products they've already purchased. AI could also compare data from finished components to identify production errors and defects before they reach customers.
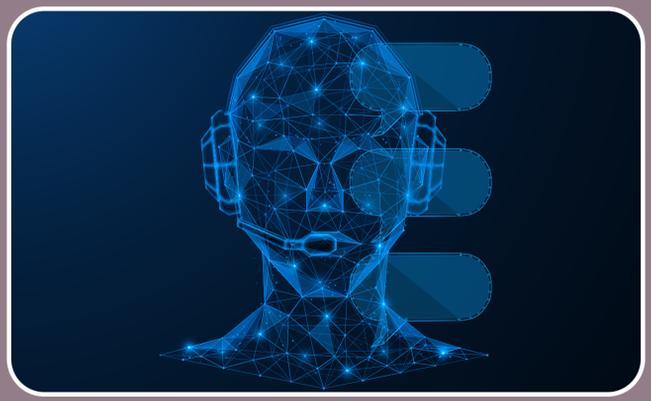
4. MARKETING AND SALES

Generative AI chatbots could write marketing and sales copy targeted to individual customers rather than broad categories and produce presentation decks automatically. They could also analyze and summarize feedback from customers, identifying product line gaps to help engineers create new products that meet customer needs.

5. HUMAN RESOURCES

Company HR departments are already using algorithms to sort through resumes, but AI will be able to assist in writing interview questions and analyzing responses to help companies find engineers with essential talents. In time, generative AI could provide self-service HR functions to small engineering firms, automating onboarding and training functions.

To learn more, read "Exploring opportunities in the generative AI value chain" by McKinsey.