The Pixelbot 3000 turns simple AI prompts into Lego mosaic masterpieces

A devoted YouTuber has designed and built a Lego printer that can automate the process of assembling elaborate brick-built mosaics, similar to Lego's art sets like da Vinci's *Mona Lisa* or Hokusai's *The Great Wave*. But while the creation draws inspiration from another Lego printer called the Bricasso, it streamlines the process using AI.

Although technically impressive when it debuted eight years ago, Jason Allemann's Bricasso required a complicated process where mosaic designs had to be manually created, printed on paper, and then scanned by the machine's camera. The YouTube channel Creative Mindstorms used some custom code and AI, so generating a Lego mosaic requires one simple input.

With the Pixelbot 3000, users simply have to type in what artwork they want the printer to create. The prompt is sent to OpenAI's DALL-E 3, which the underlying code requests as being generated in a cartoon style to produce a simplified image that's 1024 x 1024 pixels in size.

The mosaics assembled by the printer are limited to a much smaller grid that's just 32 x 32 Lego tiles in size, but instead of resizing the image generated by DALL-E 3 to make it smaller, the Pixelbot 3000's code divides the AI-generated image into a 32 x 32 grid and samples the color of the center pixel in each square. This results in a high-contrast scaled image that produces a better mosaic in the end.

Another limitation imposed by using Lego as an artistic medium

is that the plastic bricks are only available in about 70 different colors, and the Pixelbot 3000 uses just 15 of them. The scaled AI-generated image requires one final pass to find the closest match of each colored pixel to the 1 x 1 Lego tiles used to assemble the final mosaic.

Designing, building, and programming the Pixelbot 3000 seems like it would be just as much work as assembling one of Lego's mosaic artworks, which can be over 11,000 pieces in size. If you're really looking to de-stress, just take 15 minutes and watch Creative Mindstorms' process as the Pixelbot 3000 goes from a concept to a functional reality.

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