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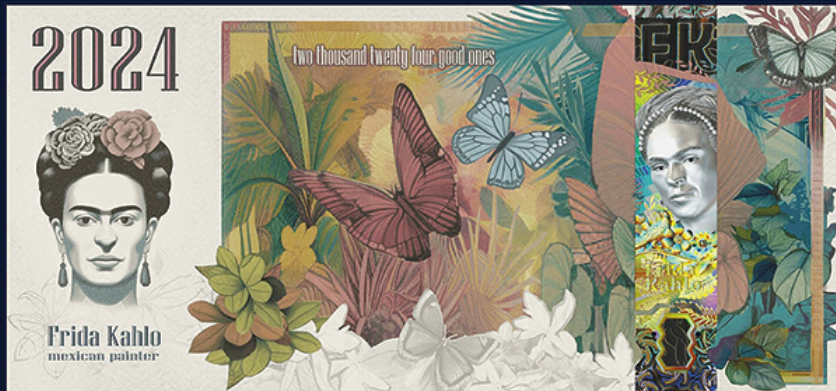
Paper Money

Artificial intelligence used for secure design elements

By [Arthur L. Friedberg](#), Special to Coin World

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Frida Kahlo banknote stripe



*The portrait of Mexican artist Frida Kahlo was generated through the use of artificial intelligence.
Images courtesy of IQ Structures.*

It was only a matter of time before AI (artificial intelligence) made its presence felt in the world of bank notes. IQ Structures, a Czech Republic research and manufacturing organization focused on challenges in anti-counterfeiting protection, has begun applying AI in the design of future bank notes. Its efforts were reported by Keesing Technologies, a software company in Amsterdam, the Netherlands.

IQ Structures has created a digital prototype house note by using DOVID (diffractive optically variable image device) designing.

Its subject is the surrealist Mexican artist Frida Kahlo (1907-1954), known for her portraits and paintings showing the nature and artifacts of Mexico. On the prototype, the portrait of her, reminiscent of her self-portraits, and butterflies, one of her popular subjects, use several advanced visual effects. Among them, the company says, are white three-dimensional bas relief for her face, rainbow three-dimensional bas relief for the inscription "Frida Kahlo," and what it termed keyhole effect, linear kinetic effect, and swap parallax.

The result is a combined effect that has a visible part, a colored effect, and a hidden part that is visible only with an adapter with monochromatic light. The note's creator describes it as old, vibrant colors having machine-readable elements that can be scanned with a mobile phone.

IQ Structures says it usually uses five or more types of AI software tools in multiple areas during the design process. Designers can cover large areas with sophisticated and detailed ornaments in a day, a process that otherwise takes weeks. AI helps write software to control measuring instruments and other devices. It is possible to create advanced concepts and models customers can use to make informed decisions during the approval process. Finally, the time required for certain tasks is reduced by more than half.

Robert Dvorak, managing director of IQ Structures, said: "Human creativity is the most valuable thing we have, so that we don't want our people to waste their efforts on something that artificial intelligence can do. Every minute an imaginative mind spends on routine tasks is a minute wasted."

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