

New software to improve design tools

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A team of Carnegie Mellon University engineers led by Levent Burak Kara and Kenji Shimada have developed software that will let engineers design new products by simply sketching their ideas on a tablet computer.

"The idea is to empower engineers and designers with tools that are already familiar to them and are the most natural for the task," said Kara, an assistant professor of mechanical engineering at Carnegie Mellon.

The software, dubbed SketchCAD, is a digital pen-based computer system that can be used to design 3D products for a variety of industry sectors.

Because thinking about a new product shape by sketching is more expressive and more intuitive for engineers than the traditional mouse-and-menu-based design interfaces, the new system gives users more freedom to be creative and a shorter learning curve for use.

By providing greater freedom in conceptual design phases and alleviating costly redesign issues, the new technology will have an immediate impact on a multitude of industries, Carnegie Mellon researchers said.

"Right now, our technology is being adopted by Honda designers for designing new cars in fast and cost-effective ways," said Shimada, the Theodore Ahrens Professor of Engineering at Carnegie Mellon.

In the future, Carnegie Mellon researchers said the new software system could be used by physicians for planning surgeries or by university professors to teach basic engineering design methods.

Within the same context, the team is also developing another software named SimuSketch that can recognize and simulate engineers' hand-drawn diagrams and mechanical systems. The system enables engineers to quickly implement their ideas in the form of diagrammatic sketches and test their feasibility with real-time simulations.

"These software have the potential to greatly enhance engineering practice by allowing users to design and analyze complex engineered systems by simply sketching their ideas," according to Kara and Shimada.

Industry experts point out that the Carnegie Mellon researchers' new system harkens back to the early 1960s with the birth of computer-aided-design tools that first sported a pen-like device. But their new tool addresses much more challenging issues in engineering design and creativity.

"It is the 21st century equivalent of an enhanced feather quill pen which also experienced many changes, too," Kara said.

Source: Carnegie Mellon University

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