News

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Professors develop electronic chip, receive grant

Science foundation grants $250,000

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Two UNT professors are developing energy-efficient electronic chips that will increase battery life, reduce power consumption and ultimately lead to lower consumer costs.

Saraju Mohanty, assistant professor of computer science, and Elias Kougianos, assistant professor of engineering technology, received a three-year grant from the National Science Foundation for $250,000 to conduct their research.

Electronic chips are in every piece of technology from cell phones to remote controls, Mohanty said.

When things like TVs, DVD players or gaming systems have wall outlets to plug into, power consumption is not as great of a concern. Battery-powered devices, however, are a different matter, he said.

"The program we're trying to address in our research is how to make these chips that are operating in all of those portable devices more intelligent so that they consume less power," Kougianos said.

Ideally, the research will make the battery life of your cell phone last several days versus several hours, he said. The key to achieving this lies in the design of the chip.

"The engineering processes under which these chips are being manufactured are more or less fixed, therefore we can not really control the engineering and manufacturing aspect of their production," Kougianos said. "However we can help in the design phase so that when they're operating they're taking into account the fact that they have a limited power supply."

The brunt of the research is focused on computer-aided design tools and algorithms that design the chips so the minimum amount of power is used, Mohanty said.

"The algorithms that these tools use to implement the design are more intelligent now," Kougianos said. "They know, for example, if they're going to operate as an encoder for the digital data that the camera provides."

Essentially, Mohanty and Kougianos are making chips operate more efficiently and consume less power by using algorithms that are in their research software, they said.

Since the alterations to the chips will be taking place during the design phase and not the actually manufacturing phase, Kougianos said that the changes would be streamlined to go straight into electronic devices.

"If you don't have to modify your manufacturing, then it's much easier to adopt in your technique, than if you have to rebuild your factory," he said.

Photo by Khai Ha / Staff Photographer

(Left) Dr. Saraju Mohanty and Dr. Elias Kougianos are researching ways to make electronic chips more efficient. They have been awarded a $250,000 grant from the National Science Foundation to continue their work.

Mohanty said he came up with the idea and has generated roughly $1 million in research funds from it over the span of five years. Contributors include the Semi Conductor Research Corporation and the National Science Foundation, he said.

Mohanty estimated it will be about three years before the chip that he and Kougianos are developing will be ready for consumers.