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It May Be 'The Summer of T3,' but at UB Robotics Workshop, 'Tickle Me Elmo' and his Sidekicks Have Center Stage

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BUFFALO, N.Y. -- What can Tickle Me Elmo, the interactive toy for toddlers, teach high school students about robotics?

Quite a lot, according to the instructors for a University at Buffalo workshop for high school students that runs July 7-11.

The animated, red, fuzzy Sesame-Street character and his interactive Sesame-Street sidekicks Big Bird and Ernie will make an appearance Monday at UB's Summer Workshop in Scientific Visualization and Robotics sponsored by the New York State Center for Engineering Design and

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Venkat Krovi will use animated Big Bird and Ernie dolls to teach local high school students the basics of robotics at a workshop to be held July 7-11 at UB.

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Industrial Innovation (NYSCEDII) in the UB School of Engineering and Applied Sciences.

"These little toys embody some of the basic principles of robotics -- using switches to sense the world, feeding this data into a microcontroller, which then governs the vibrating/laughing/moving response," said Venkat Krovi, Ph.D., UB assistant professor of mechanical and aerospace engineering and one of the workshop's instructors.

"The sounds and movements the toys make come from a sequence of switches that are similar to ones the students will use in the workshop."

After the students watch Krovi demonstrate the computer processing that lets these little toys work, they will begin working on their own "toys," actually small robots.

Teams of students will receive a robotics kit that they will work on throughout the week.

"They will be learning to use sensors to endow the robots with some basic behaviors, such as being able to follow a light, or heat or to avoid obstacles," explained Krovi.

The workshop contains a brief look at principles undertaken in detail during a whole semester in Krovi's Mechatronics course (Mechanical and Aerospace Engineering 476/576), but the aim here is different, he said.

"By the end of this workshop, we want the students to think, 'engineering is cool,'" said Krovi.

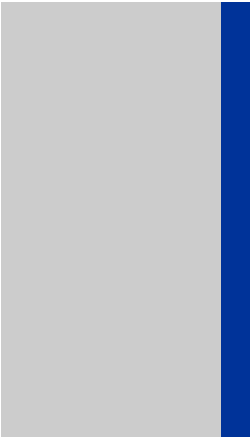
"When freshmen start an engineering program, they have to take a couple of years of calculus and physics," said Krovi. "While those courses are a necessary and an integral part of the curriculum, some of the students will end up saying, 'If this is all engineering is, I don't want it.' This workshop is about showing them some of the really fun aspects of engineering, about building devices and making things work. We want to show them that with a little bit of effort, they can make robots wander around and do really cool things."

The NYSCEDII workshop also will provide students with an opportunity to learn basic and advanced techniques in scientific visualization and virtual reality (VR). The students will be exposed to these technologies and their applications in current research projects being conducted at NYSCEDII.


Scientific visualization, explained Kevin Chugh, Ph.D., research associate for visualization at NYSCEDII, compresses the vast amounts of data now being generated in fields ranging from manufacturing to medicine into an easy-to-use, visual format. Virtual reality provides the ability to generate an immersive, virtual environment of a product or a place or an entity, whether it is a biological molecule or a spaceship.

Ten high school students will attend the workshop, representing the following school districts: Starpoint Central, Eden Central, Newfane Central, Clarence Central, North Tonawanda, Barker Central, Iroquois Central and Orchard Park Central. Students from Hutchinson Central Technical and Canisius high schools in Buffalo also will participate.

NYSCEDII provides basic research,



education and training, and industrial outreach in immersive and high-end visualization, rapid virtual prototyping, Internet-based systems for design, computer-assisted design graphics and three-dimensional modeling, real-time interactions with design and analysis simulations, visual interaction with high-performance computing applications, sensory and haptic (touch and feel) tools and interactions with virtual simulations.



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