

9-1-2005

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## Recommended Citation

Seligman, Alyson, "Talking to the Animals" (2005). *USF magazine Articles about USFSP*. 62.  
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DISCOVERY



# TALKING TO THE ANIMALS

BY ALYSON SELIGMAN PHOTO BY JASON MARSH

**T**here is one squirrel at USF St. Petersburg that is a little friendlier than the rest. He doesn't hide when people walk by. He doesn't run away when animals approach. In fact, he never moves. But that's not because he's different than most squirrels... it's because he's not a squirrel.

He's a robot.

Rocky the squirrel is designed—complete with fake fur, alarm vocalization skills and a wagging tail—to look and act like a real squirrel.

Last fall, undergraduate students in assistant professor Sarah Partan's new Behavioral Robotics course studied the behavior, movement and interactions of animals to then design and build robotic squirrels and lizards just like Rocky. One of only a handful of animal behavior robotic programs worldwide, this unique USF St. Petersburg program combines robotics with behavioral studies and integrates a multidisciplinary approach, from psychology and biology to engineering and art.

Rocky is mounted on a grass-covered mound covering the electrical components and is placed in a natural environment, such as a park or on campus, to see how a real squirrel responds and communicates to its visual

and audio signals.

So far, squirrels have paid attention to this life-like robotic squirrel. After acknowledging its alarm signals, many respond by running to hide in a tree, or even mimic its actions, doing a tail flag or bark.

"We're able to get answers that we couldn't get in the past because we can now study an old question with new technology," says Partan, who earned her Ph.D. in animal behavior from the University of California. "Observing the animal's response to the robot helps us to understand the evolution of animal signals and to learn about species before they become extinct. Studying how animals use different sensory systems may also help us to understand how humans integrate verbal and visual signals, and may eventually have implications for improving communication with people who have lost the use of one of their sensory systems."

In the past, animal communication research involved pure observation and then progressed to two-dimensional video playback to animals to see how they responded. However, Partan quickly discovered that a three-dimensional approach could be more effective.

Since the robotics program's

inception, many undergraduate students have become passionate about this unique program, taking independent study hours with Partan in addition to regular coursework. Through this experience, students learn a hands-on interdisciplinary research approach to studying animal observation.

"This is a unique opportunity for undergraduate students to be directly involved in research, including experimental design, programming, behavioral observations and data analysis," Partan says.

USF St. Petersburg student Christian Larco, 26, agrees. As one of the three students who created Rocky last year, Larco says this opportunity to go out into the field to conduct graduate-level research and work directly with such distinguished faculty will be a great segue for graduate school.

"It is intriguing to use a synthetic animal to communicate with other animals and manipulate their responses," Larco, a psychology major, says. "It's really exciting to be one of the first to be involved in a new way to study behavior while directly learning how to conduct professional research."