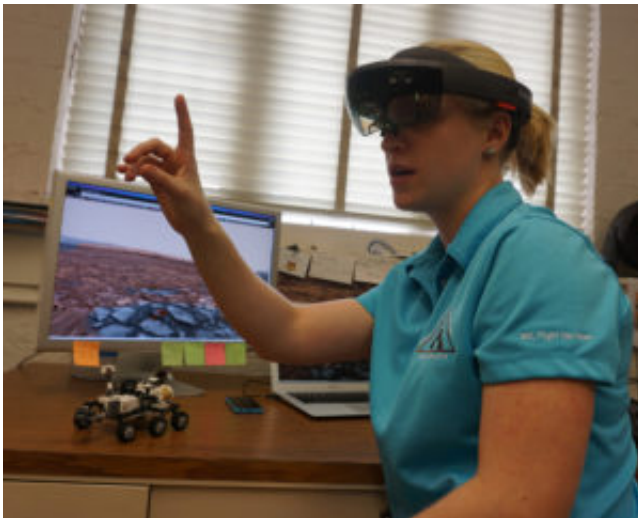


Student tests HoloLens for NASA, gets closer look at Mars surface

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Rachel Krontyak demonstrates the use of the HoloLens. The image she sees in 3-D is displayed on the computer screen. Credit: University of Tennessee at Knoxville

Every day, Rachel Krontyak walks around the surface of the planet Mars, examining a rock or getting a closer look at a butte framing the horizon.

A [doctoral student](#) in geology at UT, Krontyak is among a small set of [research scientists](#) worldwide testing the use of an augmented reality headset to see how it can help NASA determine whether Mars could support life.

The HoloLens allows scientists to explore the surface of Mars in a three-dimensional hologram using images captured by the Mars rover Curiosity. The use of the device for the mission represents a partnership between Microsoft and NASA.

"It gives a much better context for what we're looking at with the rover and allows us to get closer," said Kronyak, who received the HoloLens this fall. "It just adds another dimension to driving and operating a vehicle on Mars."

Kronyak, a native of New Jersey, is working with Linda Kah, UT professor of earth and planetary sciences, who has been part of the Curiosity mission since the rover landed on Mars in 2012. Kronyak was the first student Kah brought onto the Mars Rover science team, in late 2014.

The team helps plan out the daily operations of the rover and analyzes the data sent back to Earth. Curiosity—a robotic vehicle roughly the size of a Mini Cooper—includes two primary cameras that serve as the eyes of the rover and a robotic arm with several science instruments, including a high-resolution camera capable of taking detailed images of nearby rocks as well as selfies. The rover also has a laser on its head, called ChemCam, that shoots beams as far as 21 feet at a rock of interest, creating a plasma. Curiosity then analyzes the plasma with a spectrometer to determine the rock's chemical composition.

The rover is currently driving on rocks that likely represent ancient lake deposits, which indicate a body of water could have existed there, Kronyak said.

"One of the coolest things Curiosity can do is drill into a rock and analyze a powdered sample," she said, noting that it gives scientists a comprehensive way to study rocks on Mars.

The data collected from the [rover](#) and HoloLens will also be folded into her dissertation research, Kronyak said.

Provided by University of Tennessee at Knoxville

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