

in the spring with Dr. Minor on gravitational lensing simulations. She obtained a very competitive and unique multidisciplinary mathematical physics internship at UC Berkeley for the summer at the Mathematical Sciences Research Institute. The research project, titled “Sandpile Groups,” lies at the “intersection of group theory, combinatorics, linear algebra, and algebraic geometry” (Dr. Garcia-Puente, Sam Houston State). Working in the python-like Sage language, Dominika said the skills she learned in the CCPP MSR course at AMNH were helpful. She will attend Berkeley in the fall.

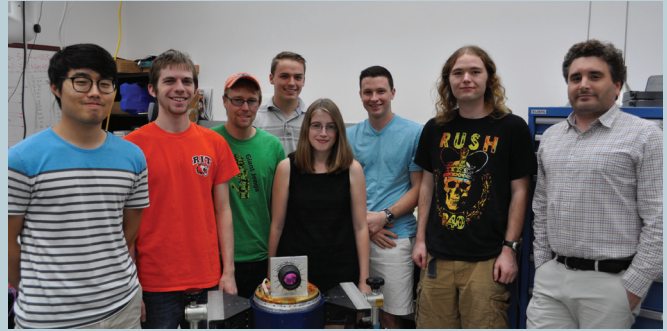
Sarah Pascall (Onondaga CC) spent the summer at NJSG affiliate Stevens Institute of Technology through the GISS initiative, working with Professors Miles and Thangam on a robotics project. She mapped out an extensive 8-week project plan for the creation and execution of an autonomous, light-sensing, obstacle-avoiding robot. She conceptualized four alternative designs and brought the most effective design to life by cutting out the robot’s plastic frame, utilizing C++ and an Arduino board for the coding, and soldering the connections for the navigational target light sensors. Her robot won their internal competition among the student teams.

The NYSG CCPP director, Tim Paglione from CUNY York College, described the program at the National Space Grant Directors’ meeting in Arlington, Virginia last March and will report at the Regional meeting this fall. Much smaller versions of the program will persist through 2018. —*Timothy Paglione*  
*below: Sarah Pascall’s autonomous robot project.*



## ROCHESTER INSTITUTE OF TECHNOLOGY

### Students Build CStars



above: *The CStars team.*

Students at the Rochester Institute of Technology are building an attitude control system that works at the temperature of liquid nitrogen. Named Cryogenic Star Tracking Attitude Regulation System (CStars), this project is funded by NASA’s Undergraduate Student Instrument Program and gives students a chance to work on cutting-edge instrumentation with NASA. “This project is an extraordinary opportunity,” says Kevin Kruse, the project’s team leader. “CStars will be the first star-tracker designed to work at such low temperatures.”

Last spring/summer of 2016, Team Leader Kruse, Project Manager Hyun Won (Bus.Admin.), Elec. Engineer Benjamin Bondor, Mech. Engineers Philip Linden and Chris Pape, Software Engineer Poppy Immel, System Engineer Matthew Delfavero, as well as graduate student mentor Chi Nguyen, faculty mentor Dr. Dorin Patru, and Principal Investigator Dr. Michael Zemcov designed and built the instrument’s cryostat, telescope, electronics, and control software. The first flight of CStars is scheduled for December 2016, and some of the team will travel to Wallops Flight Facility in VA to participate in launch operations. In spring 2017, the team will launch a second time as part of a NASA science payload. “This kind of program gives these students important opportunities to work hands-on on a real spaceflight project,” says Dr. Zemcov. If successful, this technology has wide-ranging uses, from new types of spectrometers to cameras for the outer solar system. —*Michael Zemcov*