PiMERS

Pathways in Mathematics Education and Remote Sensing

- A joint effort between Elizabeth City State University (ECSU) and NASA Langley Research Center (LaRC).
- PiMERS is a two-year project.
- Contributes to the effective implementation of NASA's educational goals and objectives using NASA's unique assets and capabilities in Mathematics Education and Remote Sensing.
- NASA MUREP NNX16AC89A

PiMERS

Pathways in Mathematics Education and Remote Sensing

- Dr. Linda Bailey Hayden, Principal Investigator
- Dr. Darnell Johnson, Education Outreach Manager
- Ms. Steffi Walthall, Student Intern
- Mr. Derek Morris, Student Intern
- Mr. Joal Hathaway, Administrative Assistant
- Mrs. Dana Chandler, Secretary
- Mr. Jeff Wood, Graphics Artist

PiMERS

Pathways in Mathematics Education and Remote Sensing

Robots have intrigued humans and captured our imaginations for centuries

ELIZABETH CITY STATE UNIVERSITY

ROBOTICS & NASA,

ROBOTICS & PIMERS,

ROBOTICS & YOU !!!

The Remote Sensing focus of PiMERS and Robotics are a natural fit.

A robot may be define as a self-controlled device consisting of electronic, electrical, or mechanical units.

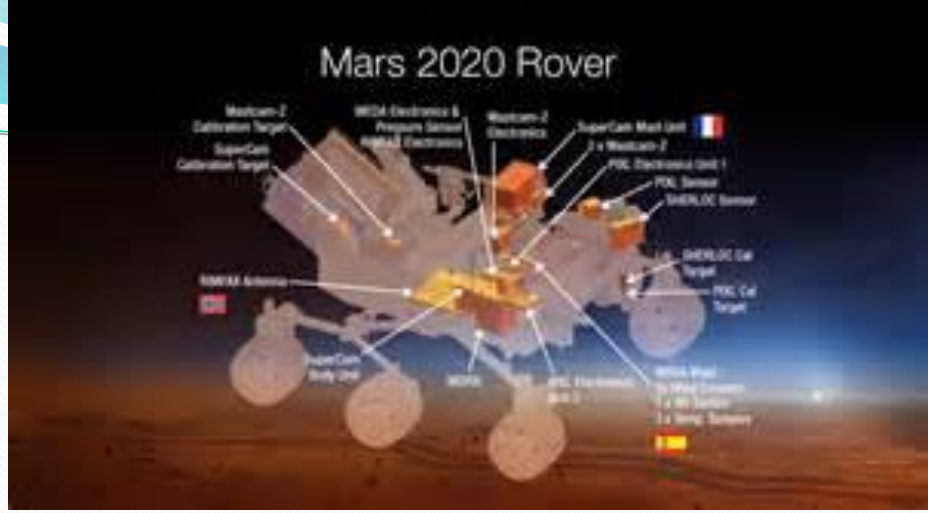
More generally, it is a machine that functions in place of a living agent. Robots are especially desirable for certain work functions because, unlike humans,

And, they never get tired;

They can operate in airless conditions; they do not get bored by repetition; and

They cannot be distracted from the task at hand.

robotics is sure to play and important role in our destiny.



- Thus, robots are especially valuable to space exploration. Not only can they travel to environments too hostile or too distant for human explorers, but they can also enhance the work schedule of a manned space mission.

Robotics

and You

Two common professions in this discipline are robotics technicians and robotics engineers. Both engineers and technicians have several specialties to choose from within the field of robotics. Some of these include machine automation, medical robotics, cybernetics, quantum mechanical systems, air traffic management and a variety of other areas that utilize robots to make work processes easier for humans.

	Robotics Engineer	**Robotics Technician**
Education Requirements	Bachelor's Degree	Associate Degree
Median Salary (2014)**	$75,296	$55,000

*Sources: *U.S. Bureau of Labor Statistics, **PayScale.com*

- Robotics Flight Controller
- November 9, 2009
- **Name:** Jessica Calhoun
- **Job Title:** Robotics Flight Controlled
- **Education:** Bachelor's degree in aerospace engineering from Georgia Tech ('08) and master's degree in systems engineering from University of Houston-Clearlake ('11)
- **NASA Center:** Johnson Space Center
- **Hometown:** Baton Rouge, La.
- **Hobby:** Basketball, bike-riding, traveling and reading
- http://www.nasa.gov/audience/foreducators/robotics/careercorner/Jessica_Calhoun.html#.V148VK7zjTR

Robotics Engineer

Name: Les Quiocho

Job Title: Robotics Engineer

Education: Bachelor of Science in mechanical engineering from the University of Texas at El Paso; Master of Science in mechanical engineering from the University of Houston

NASA Center: Johnson Space Center

Hometown: El Paso, Texas

Hobby: Being involved in my two sons' extracurricular activities (e.g., baseball, basketball, music, etc.)

At the most basic level there are some core subjects which you need.

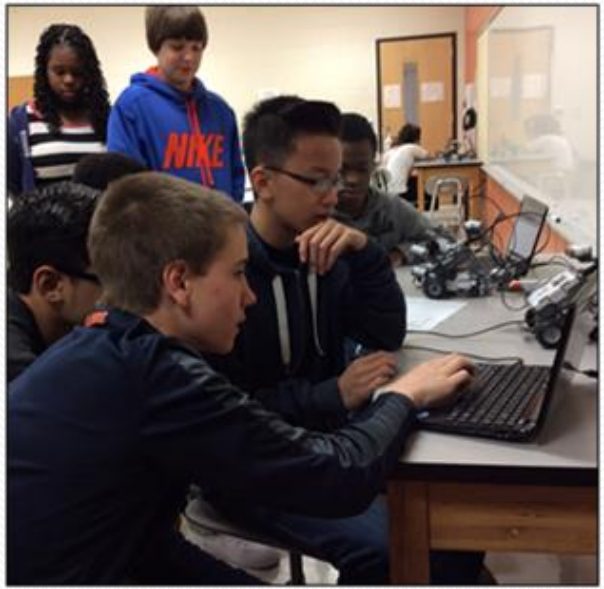
- **Mathematics - This is a must.** You don't have to be John Nash, but a good grasp of algebra and geometry are essential to all of the subjects which make up robotics.

- **Physics (or another science)** - Having a solid understanding of science is important for all branches of engineering. Physics is particularly useful because it gives grounding knowledge in energy, electrical circuits, mechanics, material science and other key topics for robotics. However, all sciences are useful as they teach how to apply mathematics to real world problems.

Other Useful Subjects

- **Computing and Programming** - Programming is pretty important for robotics, so subjects like Computer Science and Information Systems are a great choice.
- **Design and Technology** - Subjects that can boost the practical side of engineering include Product Design, Graphic Communication, Technological Studies and Manufacturing.
- **Specific Engineering Disciplines** - Some schools provide subjects in specific engineering disciplines such as Automotive, Bioengineering, Electronics, Mechatronics and Mechanical engineering. All of these can be beneficial for aspiring roboticists.


PROJECT
DISPLAY BOARD

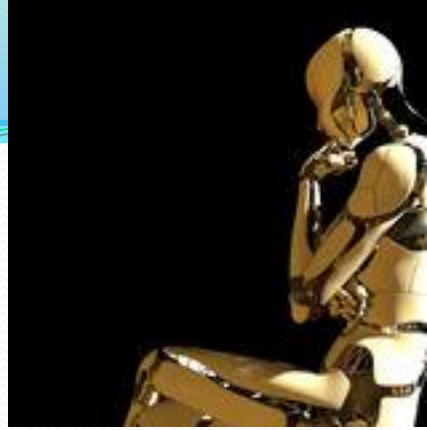

NIKE

Robotics & You

Robotics & You

Robotics & You

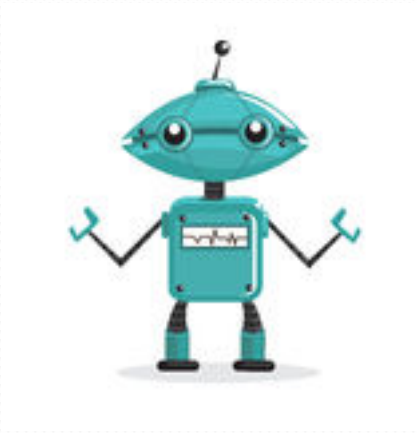
Robotics & You….



- Investigate all the ways robots and robotics will be essential to the construction, operation, and maintenance of the Space Station.
- Computers are considered the "brains" of robots, and at this point, the exploration of Artificial Intelligence (AI) is the crux of robotics research. Have students find out more about the development of computers and then discuss this statement.

Robotics & You

- Imagine that robot arms are readily available to consumers. Have students discuss or write about practical applications, describing specific task that could be accomplished more efficiently.
- Create a picture storybook that illustrates the use of robots and robotics in space. Share it with younger students. * Create a data base of each of the space missions, including name, mission number, date, duration, crew members (if applicable), and robotic achievements. * Write a short report on the topic.

Welcome to the PiMERS Middle School Summer Program

New ROBOT BUILDERS….begin here!