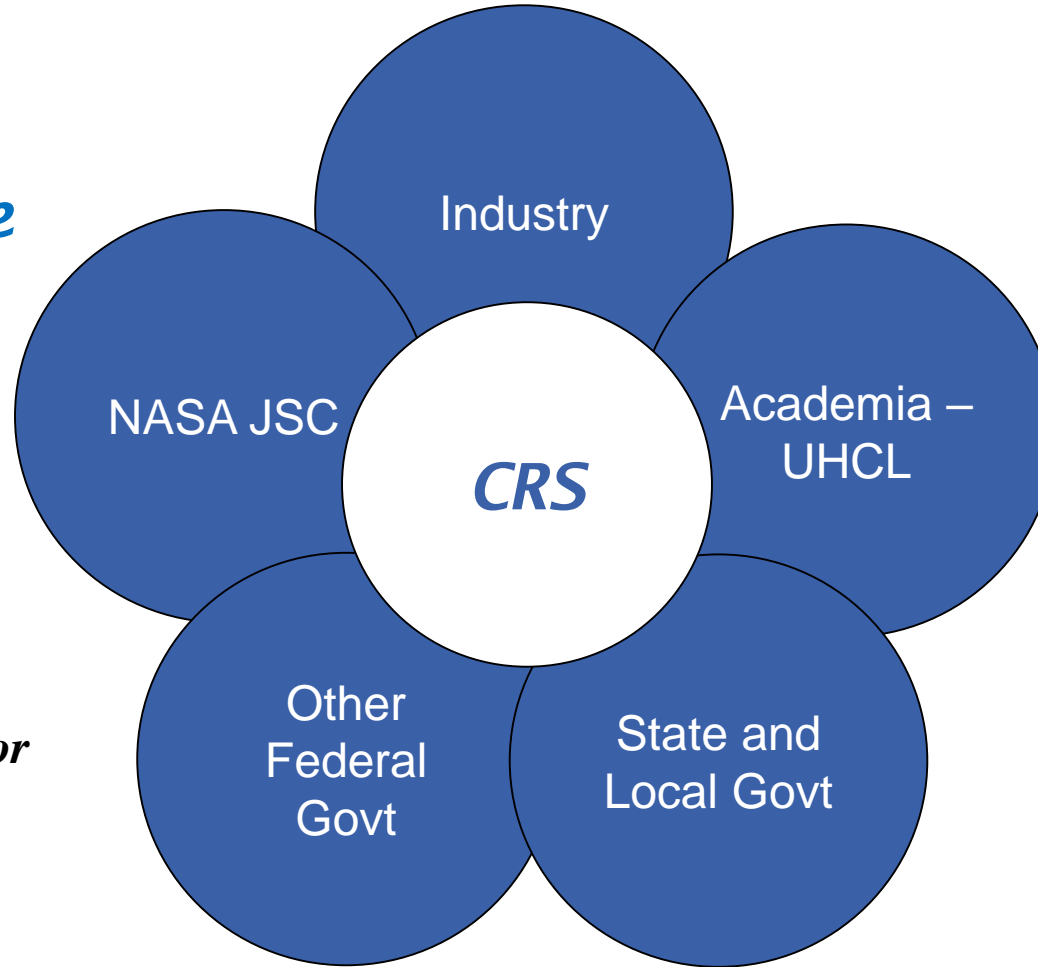# Center for Robotics Software

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University of Houston Clear Lake

MISSION STATEMENT

The Center was conceived during consultation with key members of the NASA and local community. The main purpose is to leverage the technical infrastructure that exists between NASA, academia, and industry to identify and solve challenging automation and robotics problems. The emphasis is on ROS applications.

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WHY A ROBOT OPERATING SYSTEM -ROS ?

- IDEAL FOR EDUCATION, RESEARCH, AND APPLICATIONS

- ROS software has revolutionized development of robotics software and applications around the world. Developed at Stanford and released about 10 years ago. Many robots are ROS compatible.

- ROS is composed of software packages for robot control, vision, and navigation. No need to write software if a package is available.

- ROS is Open Source. Use is not restricted.

- ROS packages can be modified to fit specific applications.

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ROS VERSIONS

- Current ROS Used in Universities and Industry

- Hundreds of robots use ROS – mobile, aerial, submersible, and manufacturing robots.   Self Driving automobiles and trucks ?

- ROS-I Industrial ROS is being developed for use in manufacturing industries.

- ROS-M Military is being developed for secure military robotic systems.

- ROS 2.0 Redesign incorporating new technologies
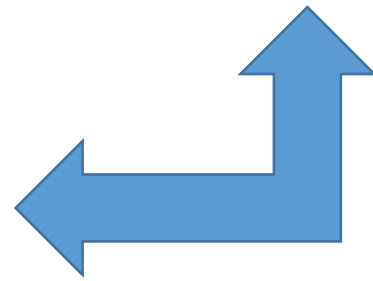
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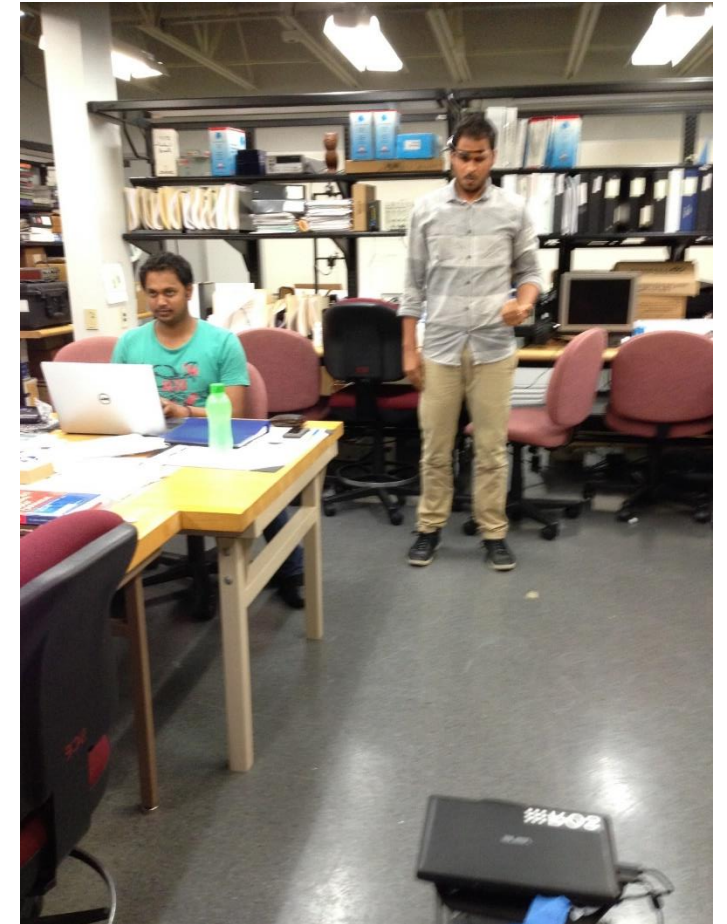
Center for Robotics Software CRS
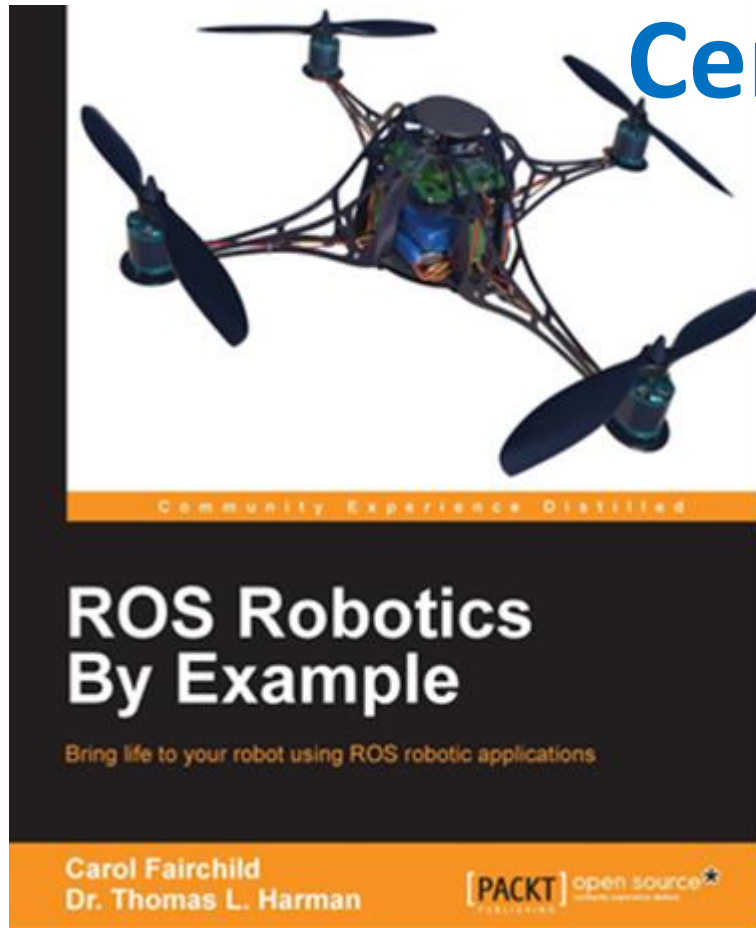
- Our Textbook Published in 2016
- Being Updated this Summer
- ROS Basics, Simulation, and Real Robots
- Mobile Robots, Baxter, Flying Robots
- ROS connections with External Devices
- ROS applications in MATLAB
- Now in Revision for ROS Kinetic

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ROS KINETIC VERSION

Carol Fairchild, Dr. Thomas L. Harman

ROS Robotics By Example

Second Edition

Building and programming wheeled and flying robots using ROS Kinetic Kame

Packt>

FROM BRAIN TO BAXTER

MOVE Darn It!

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KENNEDY SPACE CENTER SWARMATHON

SCOPE of CRS

•Commercialization of Space Technology

•Educated Workforce

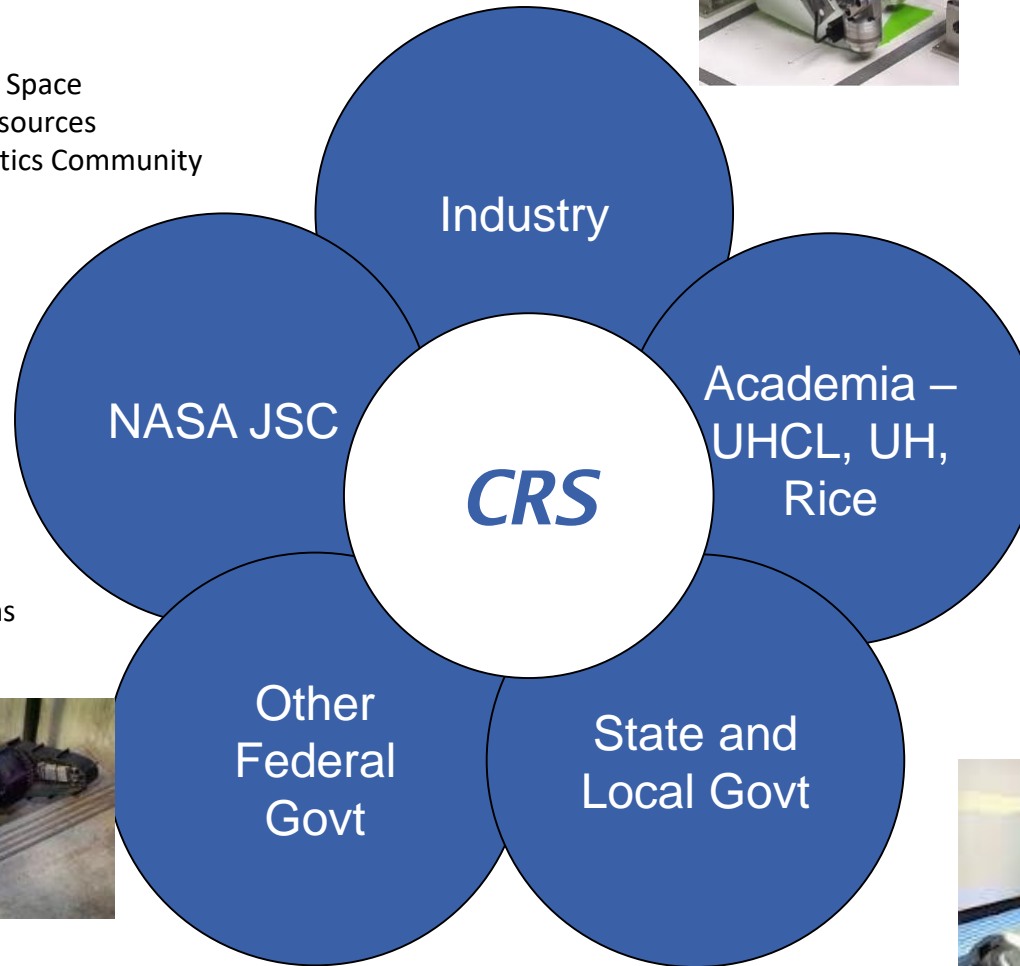•Attract Top Students
•Train Students for Robotic Careers
•Conduct Research

•Advanced Robotics for Space
•Leverage Academic Resources
•Strengthen Local Robotics Community

Industry

NASA JSC

Academia – UHCL, UH, Rice

CRS

•Solutions to Hard Problems
•Capabilities to Deploy

Other Federal Govt

State and Local Govt

• High Tech Jobs
• Grow the Local Economy

SUMMARY

- For the Center, the focus is on using ROS for robotic software projects. This software has revolutionized development of robotics software and applications around the world.

- For example, NASA JSC is using ROS for future development of the Robonaut humanoid robot that is in current use on the International Space Station.

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