**Student-led Capstone Project: Real-world problem replicated with a classroom robotics challenge.**

- **For use by Systems Engineering and other instructors**
- **Provide an end-to-end robotic system case study with conventional and object-oriented (O-O) software approaches**
- **Develop a series of six to ten modules**
  - Instructor material
  - Student assignments
  - Development artifacts
  - Robotic vehicles for classroom and student use.

- **Demand by DoD for robotic systems is increasing**
  - More capable and effective in meeting the rigors of the battlefield
  - Allowing the warfighter to avoid dangerous and dirty tasks
  - Robotics and autonomous systems development has unique challenges

- **Improve NPS student capabilities in developing and acquiring robotic systems:***
  - User needs and requirements engineering
  - Requirements modeling and functional design
  - Translating robotic system requirements into a useable system
  - Better understanding of hardware/software technology and its limitations

- **Create a set of development artifacts, e.g.:**
  - System specification
  - UML-based design model
  - Architecture and detailed design
  - Source code (C, Java)

- **Student projects will complement faculty educational material development**
  - Working HW/SW prototype
  - Design Reference Mission and simulated battlefield environment
  - Classroom-compatible hardware and software using Lego EV3 technology

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