William Ganucheau

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Education

Carnegie Mellon University   *2014 - 2017*

B.S Computer Science, Minor in Robotics, 3.9 Cumulative GPA, Dean's list every semester, Phi Beta Kappa

Teaching Assistant, 15-122 Principles of Imperative Computation
- Graded homework and exams, conducted weekly office hours tutoring students on fundamental CS concepts such as data structures and algorithms.

Software Lead, Planetary Robotics Lab:
- Lead team of 15 undergrad & graduate students to develop avionics subsystem for an experimental lunar rover.
- Programmed entire command & data-handling system.

Experience

L3Harris - Autonomous Software Engineer   *2017 - present*
Lafayette, LA

Project Lead, Path Planning & Collision Avoidance
- Principal designer and developer of company's world-class real time path planning and collision avoidance system for autonomous surface vehicles. The system plans paths in real time that achieve complex mission goals while avoiding both moving and static obstacles in a way that adheres to international regulations for collision avoidance at sea (COLREGS).
- For the 2 years that the project has been in development, my primary responsibilities have included:
  - Researching current state-of-the art in path planning
  - Authoring > 90% of the codebase (currently consists of over 100k lines of performant C++ code)
  - Developing tests and metrics to evaluate performance to facilitate rapid iteration and productization
- Developed Python/Javascript/MySQL-powered test visualization tool to visualize planner performance and measure regressions and improvements.
- System has been deployed to customers and exercised in a real world environment for hundreds of hours without human intervention.

Software Engineering Intern
- Developed physics-based simulator for marine vessels, enabling company to test autonomy algorithms in a lab setting as opposed to on a physical boat, drastically decreasing the feedback loop between development iterations.
- Developed incremental synchronization protocol that greatly reduced bandwidth consumption allowing large control plans to be transferred from land to autonomous vessels.

NASA Jet Propulsion Laboratory - Software Developer Intern   *Summer 2016*
Pasadena, CA

- Researched and implemented several state-of-the-art planning algorithms including RRT*, RRT#, and CLRRT#.
- Implemented automated test suite in ROS & integrated with JPL's official navigation simulation environment.
- Documented work and presented results to team of researchers & project leads.

Projects

- **Operating System -** Worked with a partner to develop a threaded operating system from scratch using C & assembly
- **Provably Safe Boat Controller** - Developed and proved with formal logic a boat controller that guarantees various safety properties for an autonomous marine vessel

Skills

- **Advanced**: C/C++, Linux, Qt, Mercurial
- **Proficient:** Python, Javascript/Node.js/Typescript, HTML, Git, MySQL