Andrew Gutierrez

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SUMMARY

Versatile engineer with experience designing cyber-physical system architecture, electromechanical hardware and software for autonomous vehicles and other robotic systems. 2 years of industry experience working on multidisciplinary engineering teams to develop mission critical autonomy software for aerospace and defense applications.

EDUCATION

University of Rochester, Hajim School of Engineering, Rochester, NY   **Aug 2015 - May 2019**
BS, Mechanical Engineering | Minor, Computer Science
GPA: 3.57, High Distinction
Relevant Coursework: Artificial Intelligence, Machine Vision, Advanced Mechanical Design, Robot Construction
Varsity Cross Country & Track and Field

PROFESSIONAL EXPERIENCE

Robotics System Engineer (MTS-2), Charles Stark Draper Laboratory   **Dec 2019 - Present**
- Member of the Autonomous and Navigation Systems group with a focus on developing mission critical autonomy software for Unmanned Aerial and Underwater Vehicles (UAV & UUV)
- Developed core UUV autonomy activities, subsystem interface tasks, visualization tools and simulations models
- Performed analysis and prototype implementation of experimental UUV autonomy architecture
- Built interface software to process serialized UAV missions and stream sensor data to a ground station network
- Designed and implemented a landing sequence to coordinate landing a UAV on a covered base station

Research Assistant II, University of Rochester Department of Biomedical Engineering   **Apr 2017 - May 2019**
- Developed equipment and software to increase efficiency and reliability of experiments under Dr. Mark Buckley
- Co-authored a manuscript published in Tissue Engineering depicting a bioreactor for chick embryo joint loading
- Independently developed a biaxial testing platform to characterize viscoelastic properties of biological samples
- Designed and prototyped electromechanical hardware to apply sub-millimeter displacements and stresses to tendon
- Developed software for precision motion control, real time data collection, and automated test procedures

ADDITIONAL PROJECTS

Lidar Terrain Scanning Robot, University of Rochester   **Jan 2019 - May 2019**
- Worked on a team to design a cable traversing robot that generates point cloud models of terrain from lidar scans
- Designed all mechanical parts in SolidWorks and fabricated them with 3D printing and on the mill, lathe or CNC
- Developed software to drive the sensors and motors, stream data and render point clouds in a custom OpenGL UI

Solar Splash Chief Engineer, University of Rochester   **Aug 2017 - June 2019**
- Supervised all engineering projects on the 14ft electric boat designed by the Rochester solar racing team
- Redesigned the drivetrain and power electronics to increase top speed by 50% while using 60% less energy
- Designed a modular telemetry network and binary communication protocol used to transfer data between the on-board sensors and drive-by-wire control electronics
- Established the data driven design philosophy that helped the team improve from last place at the 2017 competition to 5th place in 2019 winning multiple awards

LICENSES, AWARDS & CERTIFICATES

Udacity Nanodegree, Autonomous Flight (Flying Car)   **May 2021**
Engineer in Training (EIT), Connecticut License #0012600   **Sept. 2019 - Present**
Eagle Scout, BSA Troop 175   **Mar 2015**

TECHNICAL SKILLS

Programming Languages: C++, Python, MATLAB, C, Bash, Java, JavaScript, HTML/CSS
Frameworks and Tools: ROS, PCL, OpenCV, PyTorch, RTI DDS, CMake, GNU Make, Git, SVN, Node.js
CAD/Analysis: SolidWorks, Siemens NX, NASTRAN, Fusion 360, EasyEDA
Fabrication: 3D printing, Mill, Lathe, Bandsaw, CNC Laser, THT/SMD Soldering