Max DeSantis

desantis.max.a@gmail.com | maxdesantis.me

Education

Oklahoma State University — *Stillwater, OK*

B.S. in Electrical Engineering, B.S. in Computer Engineering — *Expected May 2023*

Minors Spanish and Mathematics — *GPA: 4.0*

Research Interests Multi-agent and harsh environment robotics, human-machine interfacing

Experience

Controls, Robotics and Automation Laboratory — *Stillwater, OK*

Undergraduate Research Assistant — *Oct 2019 - Present*

- Developed wind-aware piloting interfaces for quadrotors in QGroundControl
- Implemented 3D spatial and temporal wind simulation into Microsoft AirSim
- Assisted senior design team hardware/software implementation of lane following on autonomous golf cart project
- Designed and built a low-level PID control system using C++ and ROS on embedded STM32 board

Molex — *Lisle, IL*

Electrical and Software Engineering Co-Op — *Jan 2021 - Aug 2021*

- Built modular test automation platform using C# to reduce repetitive software testing
- Created project-independent data display and real-time graphing library to accelerate production of test and analysis GUIs
- Performed worst case circuit analysis on automotive USB power delivery board
- Completed simulation and hardware EMC testing to validate new board's compliance to industry and customer standards

Medical Oxygen Tank Time Estimator — *Edmond, OK*

Electrical and Programming Lead — *Aug 2018 - Jun 2019*

- Invented prototype device with web interface to estimate oxygen tank depletion for COPD patients
- Pursued patent on custom modular adaptor and attachment device
- Demonstrated project to senior engineers, medical professionals and community
- Co-wrote 500+ pages of technical documentation throughout design process

Extracurricular Activities

OSU Mercury Robotics — *Stillwater, OK*

Vice President and Control Systems Lead — *Aug 2021 - Present*

- Tasked to retrofit unmanned maritime vessel for autonomous algal bloom detection
- Responsible for integrating on-board takeoff/landing support for quadrotor companion drone
- Promoted skill growth among team by hosting relevant technical training and on-boarding sessions
- Seized opportunities for club expansion into new areas and activities

NASA Micro-g NExT Challenge — *Stillwater, OK*

Electrical and Autonomous Systems Team — *Oct 2019 - Jun 2021*

- Designed prototype autonomous search and rescue boat to deliver supplies to stranded astronauts
- Assisted in design/build of custom radio direction finding circuitry and software
- Used ROS to establish low-level motor control, safety constraints and remote operation
- Planned and constructed waterproof power distribution system

Gimbaled Face-Following Robot — *Stillwater, OK*

Programming and Computer Vision Lead — *May 2020 - Sep 2020*

- Used C++ with OpenCV libraries to accurately detect faces
- Actuation using servo and stepper, capable of following moving faces
- Implemented processing with Raspberry Pi master and Arduino puppet communicating over USB

Skills

Programming C++, C, C#, Python, OpenCV, Matlab, Java, VBA

General UNIX, Git, ROS, LaTeX, SPICE, KiCad, Unreal Engine

Interpersonal Public speaking, project management, oral and visual presentation

Honors & Awards

2021 OSU Undergraduate Research Scholar

2020 Best Poster, OSU International Mechatronics Conference

2020 Koch Discovery Scholar

2020 Leo J and Josie Mosely Peters Scholar

2019 Blair and Mary Stone Scholar

2019 5th Place, National SkillsUSA Engineering Design

2019 Oklahoma State Regents Scholar

2019 Project Lead the Way STEM Scholar