AYBERK YARANERI

217 390 1132 ⋄ ayberkyaraneri@gmail.com ⋄ github.com/ayberky

TECHNICAL COMPETENCIES

Languages:	(Proficient) C++, Python, MATLAB, (Familiar) Java, LaTeX
Tools:	Git, Vim, Conda, GDB, TensorFlow, Keras, OpenVino, Gazebo, Robot Operating System
Relevant Skills:	Linux, Embedded Systems, PID Control, I^2C, SPI, UART, PCB Design & Debugging, UAV Piloting

EXPERIENCE

Illinois Applied Research Institute   February 2019 - September 2019
Robotics Developer

· Assisted in the development of autonomous multirotor UAVs intended for a simulated reconnaissance mission utilizing convolutional neural networks for detection and tracking of ground ajents.
· Conducted transfer learning on various object detection networks such as Faster R-CNN, SSD, and YOLO.
· Optimized trained neural networks using the OpenVino toolkit to run on an Intel Movidius Neural Computer Stick for accelerated on-oard inference.
· Configured Raspberry Pi computers to work with the Movidius NCS and transmit observations as Mavlink messages through the Pixhawk flight controller's telemetry connection.
· Wrote code to automate data collection and labelling which expedited the training process.

LEADERSHIP AND PROJECTS

NASA Student Launch Rocketry Competition   September 2018 - Present
Chief Engineer of Payload

· Collaborating with Project Manager in leading the development of an air deployed autonomous quadrotor intended to deploy from a rocket during descent. Aircraft is tasked to execute a simulated ice sample retrieval mission.
· Working with the Navio2 platform for hard real time IO coupled with a Raspberry Pi running the open source Ardupilot flight stack for autonomous guidance navigation and control.
· Implementing computer vision algorithms in C++ to run on the Raspberry Pi which will detect and guide the UAV's descent towards the ice retrieval site.
· Applying software-in-the-loop methods using Ardupilot-SITL and Gazebo as a physics engine to thoroughly test corner cases and validate software reliability.
· Formulating a development, manufacturing, and testing schedule for software and structural components of the aircraft.

NASA Midwest High Power Rocketry Competition   September 2018 - September 2019
Avionics Team Lead

· Lead an all-freshman team in developing an avionics package tasked to collect performance data of a supersonic high powered rocket using a variety of sensors.
· Embedded a Raspberry Pi Zero as the primary flight computer which utilized I^2C, SPI, and UART communication protocols to acquire data from on-board sensors.
· Assigned and oversaw the development of flight software written in Python for all sub systems.
· Successfully incorporated Git as a version control and collaboration tool which significantly enhanced the team's work flow.
· Coordinated the development and assembly of a printed circuit board allowing for a more streamlined design.
· Placed 2nd overall in competition completing five flights, two of which were supersonic.

Spaceport America Cup Rocketry Competition   September 2018 - June 2019
Avionics Team Member

· Developed an on-board flight computer to actuate external control surfaces for roll control and active drag manipulation.
· Embedded an Atmega328P microcontroller and wrote flight software implementing a closed loop PID controller.
· Designed and assembled a printed circuit board that served as the primary structural member of the flight computer.
· Assisted in the development of Wi-Fi enbaled solid state switches using ESP8266 microcontrollers to wirelessly toggle power to onboard systems.

EDUCATION

University of Illinois at Urbana Champaign   *2018 - 2022*
Bachelor of Science in Aerospace Engineering   *GPA : 3.43/4.00*
Minor in Computer Science