# Riley Kenyon

Broomfield, CO, USA ● Riley.Kenyon@colorado.edu ● 303-330-5684 ● rileykenyon.github.io

## EDUCATION

**M.S. Mechanical Engineering**, University of Colorado Boulder May 2020
GPA: 3.97/4.0

**B.S. Mechanical Engineering**, University of Colorado Boulder May 2019
GPA: 3.85/4.0

**Certificates:** Certified SolidWorks Associate (C-33LVZSD55F)
NVIDIA Fundamentals of Accelerated Computing with CUDA C/C++
STK level 1 Certified

## ENGINEERING EXPERIENCE

**Siemens Gamesa Renewable Energy,** Engineering Project Support - *Blade Inspection Camera* May 2019 – Present

- Aided in commercializing a tower mounted turbine blade inspection device by developing a functional prototype
- Enhanced the concept of operation and created business case to market viability of the remote inspection method
- Improved inspection image accuracy of wind turbine blades using OpenCV to detect and track blade location
- Created command line interface to initiate inspection, debug log, image archive, and create spatial metadata

**Electro-Mechanical Products,** Manufacturing Intern - *Coherent Pressure Test Unit* May 2018 – Aug 2018

- Developed an automated quality control unit to determine faulty heat exchangers and increase efficiency by 30%
- Implemented solenoid valves to automate wash, rinse, and dry cycle actuation using MOSFETs
- Amplified signals from a differential pressure transducer and thermocouple probe to be read by microcontroller
- Programmed microcontroller using *Arduino IDE* to display outputs, open valves, toggle relays, and read signals

## RELEVANT PROJECTS

**Police Academy Autonomous Vehicle,** University of Colorado – *Mechatronics and Robotics* Jan 2020 – May 2020

- Collaborated in a team to deploy an autonomous robot capable of firing Nerf projectiles at targets
- Integrated packages for Ubuntu 18.04 on a Raspberry Pi including *ROS*, *TensorFlow*, and *OpenVINO* toolkit
- Implemented a proportional feedback loop with IR proximity sensors measurements to maneuver robot
- Developed machine learning model for target recognition and implemented on Intel Myriad X chip

**Control Systems Laboratory,** University of Colorado Boulder – *Quanser Experiments* Jan 2020 – May 2020

- Developed an understanding of the full design process to introduce control laws for unknown systems
- Determined models of Quanser hardware modules using classical and Lagrangian mechanics
- Utilized frequency and time-based methods of system identification to determine model parameters
- Designed and incorporated classical control laws in *Simulink* for state space and transfer function representations
- Gained an intuition for tuning PID, LQR, and LQI controllers to meet performance specifications
- Experimented with state estimation using a derivative filter to perform state feedback on a ball and beam system

**Animal Care Systems,** Senior Design Project (Test Engineer) - *Mechanized Cage Monitoring Kit* Aug 2018 – May 2019

- Designed a remotely accessible monitoring system for overnight viewing of laboratory setting
- Automated smooth rotation of carousel with stepper motor micro-stepping and rotational tracking via encoder
- Created GUI for remote control of motor and IR cameras utilizing an *Apache* server hosted on Raspberry Pi
- Developed and executed test procedures to verify vibration, noise, and light requirements for animal comfort

**Independent Study,** University of Colorado Boulder - *Optimized Game Automation with GPU* Jan 2019 – May 2019

- Designed a computer vision algorithm to detect tile position and estimate tile velocity for the game "Piano Tiles"
- Automated solenoid actuation based on visual servoing to emulate physical interaction with touchscreen
- Utilized accelerated parallel processing on a GPU with *CUDA C/C++* to process frames from MIPI camera
- Increased computational efficiency such that the automated system exceeds the average human response time

## SOFTWARE/TECHNICAL SKILLS

- Proficient in *C, CUDA, LabVIEW, Linux/Unix, MATLAB, Microsoft Office, OpenCV, Python, Simulink, SolidWorks*
- Hardware experience with *Raspberry Pi, NVIDIA Jetson Nano, Arduino, National Instruments, Quanser*