Name: Kevin Chang

Contact Info:

Email: Kevicha5928@gmail.com
LinkedIn: https://www.linkedin.com/in/kevin-chang-49528b5b/
Website: https://kevicha5928.github.io/portfolio/

Skills

Python, JavaScript, Arduino, Matlab, SQL, React, Pandas, NumPy, matplotlib, Dash, OpenCV, Mongoose, Express, NodeJS, Redux, Firebase, C++, ROS, Windows, Linux, SolidWorks, Microsoft Office, Visual Studio, Git, RSLogix 5000, MongoDB**,** Raspberry Pi, 3D Printing, Allen-Bradley PLC, Cognex

Experience

Company: Meso Scale Discovery
Start Date: May 2017
End Date: Current
Role: Automation Engineer II
Responsibilities:

My responsibilities focus on, but are not limited to, the architecture and implementation of PLC software, providing feedback on upcoming mechanical designs, and supporting software on machines currently in production. Additionally, I always seek to find ways to optimize existing processes by learning from previous mistakes and failures.

- Developed an adaptive self-correcting product assembly method to improve product quality. As a result, product yields increased to 99.8% from a previous ~96% yield.
- Optimized the PLC subroutines in a critical production machine resulting in a 20% improvement in production speed.
- Created an intellectual property proposal for a new method of machine vision assisted product assembly that would increase accuracy and reliability while decreasing system complexity
- Developed Python application to read data from a PLC to improve logging capabilities and data analytics
- Created a Python application that collected data from an ultrasonic sensor to track sensor performance and provide metrics to improve calibration.
- Provided critical software support to active production machines to ensure downtime was kept to a minimum.
- Led the effort to refactor existing PLC software routines which resulted in more readability and traceability
- Established a sequential code structure for robot motion control resulting in more readable code and increasing reliability
- Developed PLC code to generate robot position coordinates to reduce the number of robot positions that need to be manually taught. This resulted in less human induced error when robot positions needed to be retaught.
- Improved the accuracy and reliability of machine vision inspection systems by optimizing visual targets

Company: UMBC Autonomous Systems Research Lab (ASRL)
Start Date: September 2015
End Date: May 2017
Role: Graduate Research Assistant
Responsibilities:

I started my graduate career as one of the founding members of ASRL. My primary responsibilities were to research and pursue various projects that I and the lab could pursue to expand our expertise. Beyond schooling and research, I was involved with the logistics and setup of equipment and materials for the lab.

- Developed application to use depth sensing and skeleton tracking capabilities of Microsoft Kinect V2 to tele-operate a robot arm
- Project Lead on motion capture quadcopter control project.

Personal Projects

Title: Weight Lifting Exercise Tracker
Duration: May 2020 – Present

- Spearheaded the development of a customer facing web application with a small team of software engineers
  - Initiated discussions on design and functionality based on customer requirements
  - Led the development of the front-end UI based in React JS and Material UI
- Utilized React hooks, Redux, Redux-Thunk, and Axios for state management
- Database and Authentication handled through firebase

Title: Sorting Algorithm Visualizer
Duration: April 2020

- Developed web app to visualize the steps in several sorting algorithms (Bubble, Insertion, Merge and Quick)
- Implemented with React with hooks and react spring for physics-based animations

Title: OpenCV Color Tracking Robot
Duration: March 2016 – May 2016

- Designed and manufactured a pan and tilt camera gimbal capable of tracking and following a user specified color.
- Applied PID control algorithm and OpenCV Color tracking

Publications

- **K. Chang**, P. Rammos, S. A. Wilkerson, M. Bundy, S. A. Gadsden "LiPo Battery Energy Studies for Improved Flight Performance of Unmanned Aerial Systems", SPIE Defense and Commercial Sensing, February 2016 [Poster Presentation]
- **K. Chang**, "Modeling and Estimation of Energy Consumption in Small Electric Unmanned Aerial Vehicles", LSAMP National Conference, February 2016 [Poster Presentation]
- D. Clark, **K. Chang**, R. S. Gejji, and A. A. Ross, "Methodological Insights to Exploring the Stability of General and Photorealistic Models of the Pupil Light Reflex", Joint Mathematics Meetings (JMM), January 2014 [Oral Preliminary Report].
- **K. Chang**, "The Easy Make Oven: Tabletop Scanner", Summer Undergraduate Research Festival (SURF UMBC), August 2013. [Poster Presentation]

Presentations

- **K. Chang**, M. Bundy, S. A. Wilkerson, and S. A. Gadsden, LiPo Battery Energy Management for Improved Flight Performance of Unmanned Aerial Systems, 2016 SPIE Signal Processing – Unmanned Systems Technology XVIII, Baltimore, USA, 2016.
- Lee, **K. Chang**, S. A. Wilkerson, C. Korpela, and S. A. Gadsden, Aerial Swarms as Asymmetric Threats, 2016 International Conference on Unmanned Aircraft Systems, Arlington, Virginia, 2016.
- D. Clark, **K. Chang**, and R. S. Gejji, "A Note on Exploring the Stability of the Pupil Light Reflex", LPS-RP Technical Report, August 2013.
- M. H. Banazadeh, **K. Chang**, S. A. Gadsden, L. Zhu, R. Ma, Thermal Analysis of Casting Process of PDMS in 3D Printed Mold for Fabrication of Cell Culture Devices, 2016 ASME International Mechanical Engineering Congress & Exposition (IMECE), Phoenix, Arizona. Accepted March, 2016.
- P. Carrington, **K. Chang**, H. Mentis, and A. Hurst, "But I don't take steps": Examining the Inaccessibility of Fitness devices for Wheelchair Athletes. ACM SIGACCESS Conference on Computers and Accessibility. ASSETS 2015

Education

Institution: University of Maryland, Baltimore County (UMBC)
Degree: Bachelors of Science
Discipline: Mechanical Engineering
Start Date: June 2011
End Date: May 2015
GPA: 3.83

Institution: University of Maryland, Baltimore County (UMBC)
Degree: Masters of Science
Discipline: Mechanical Engineering
Start Date: May 2015
End Date: May 2017
GPA: 3.85