Derek Black

https://github.com/bit-dream

Email : derekblackj@gmail.com
Mobile : +1-785-432-0777

Education

Kansas State University — Manhattan, KS
Master of Science — *May 2017*

- **Areas of Study**: Control Theory, Mechatronics, and Software Development
- **Thesis**: Development and feasibility of economical hardware and software in control theory application

Kansas State University — Mahattan, KS
Bachelor of Science - Mechanical Engineering — *Dec. 2014*

Experience

Altec — Roanoke, VA
Staff Controls Developer — *Aug 2017 - Present*

Derrick and Crane Software

- Led and completed multiple major software releases for Altec derricks that added critical features needed by Altec customers and other Altec engineers/associates.
- Designed fully contained software system package for lanyard detection that syncs state via CAN bus with other ECUs on Altec Cranes. Protects operators from engaging in unsafe work practices by preventing unit motion and engaging visual and audible alarms.
- Developed software I/O mapping system for Altec derricks that allowed other Altec associates to more easily deploy custom unit applications without relying on special development and firmware re-releases, saving Altec countless man-hours across multiple teams and led to quicker product releases to Altec customers.
- Aided in development of Derrick auto-calibration system that runs proprietary algorithm to detect function start-of-movement without manual intervetion, resulting in quicker unit ship-outs.
- Integrated rotation interlock system that performs zone calculations based on feedback from CAN encoders into the Derrick product line, aiding in safer unit usage for equipment operators.

Web Development

- Wrote and released multiple web pages leveraging HTML, Bootstrap, and custom CSS for Altec's AXIS service tool. Pages are utilized and interacted with by customers, service technicians and other Altec associates across multiple product lines.

Internal Applications and Application Development

- Built internal MATLAB tool to automate setup and building of (CCP) CAN Calibration Protocol parameters, leveraging the Simulink API, saving developers hundreds of hours of development time.
- Deployed, developed, and managed internal application with MATLAB that enabled multiple teams within the Altec controls department to release, distribute, and aid with version management of internally developed tools.
- Designed logic with Python's pandas/numpy with datasets pulled via SQL/Amazon Athena to generate customer machine metrics and gather insights for product enhancements.
- Developed an LMAP (Load Moment Area Protection) validation application for Altec product engineering using Python with usage of Kvaser's canlib, Flask and a vanilla javascript front end to help automate manual testing of equipment.
- Used Python to develop web page release and staging tool that integrates with SVN and an SQLite instance to help speed up deployment for the Altec AXIS service tool. Vanilla Javascript and Bulma utilized for the user interface alongside Eel.

Kansas State University — Manhattan, KS
Lab Instructor - Control of Mechanical Systems — *Aug. 2016 - Aug. 2017*

- Prepared and delivered 45 minute lab lectures for a class size of 30+ students

Projects

Candied Open source Typescript library deployed via NPM that gives Typescript developers access to general purpose CAN tools, such as CAN database parsing (Vector DBC files), CAN message decoding and more. Leverages Rollup for isomorphic deployment, TSPeg (PEG style grammar) for the parser generator, Jest for testing, and CircleCI for continuous integration. github.com/bit-dream/candied or npmjs.com/package/candied.

Candied App Web app leveraging NextJS, React, Tailwind, D3, and the Candied library. Allows for visualization of Vector DBC files by displaying network nodes/messages as a directed graph via the D3 library. Users can edit DBC files and decode raw CAN frames to their physical values. All react components leverage the Tailwind framework and automated testing performed with Playwright. Deployed with Vercel: candied-app.vercel.app

Cocktail Hour Web app that generates uniquely crafted cocktail receipes based on keywords such as artists, albums, or events. Front end developed with React/NextJS with Chakra UI. Backend written with Python utilizing FastAPI, Spacy for word vector similiarity score ranking, and PostgreSQL. Deployed with Docker on DigitalOcean. cocktailhour.tk

Programming Skills

Languages: MATLAB, Python, Javascript, Typescript, Simulink, SQL, LaTeX
Technologies/Other: React, Next, Stateflow, CANape, HTML, CSS, Bootstrap, CAN, git, SVN, Tailwind, Jest, D3, PostgreSQL