

EXPERIENCE

Altec

Staff Controls Developer

Derrick and Crane Software

Roanoke, VA

Aug 2017 - Present

- 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 with MATLAB/Simulink and targeted at embedded devices with Simulink Coder.
- Developed software I/O mapping system with Simulink 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 intervention, 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.

Internal Applications and Application Development

- Created a validation application for Altec's Load Moment Area Protection (LMAP) system that significantly reduced the product engineering team's manual testing workload. Leveraged Python, Kvaser's canlib, Flask, and React to automate the sending and receiving of CAN messages, and used Flask to create RESTful API endpoints that enabled React to communicate with the backend. Integrated a user-friendly front-end to enable live data visualization and test management.
- Engineered an internal tool using MATLAB, Simulink API, and App Designer that automated the setup and building of CAN Calibration Protocol (CCP) parameters, saving developers hundreds of hours of development time. The tool's user-friendly front-end streamlines the process and exposes an API that allows other developers to quickly build out additional automation applications.
- Spearheaded the deployment, development, and management of an internal application using MATLAB that facilitated the release, distribution, and version management of various internally developed tools across multiple teams within the Altec controls department. Improved collaboration and reduced the risk of errors or conflicts, resulting in increased productivity and better overall outcomes.
- Utilized Python's pandas and numpy libraries to analyze customer machine metrics, gather insights for product enhancements, and inform critical product decisions. Leveraged SQL and Amazon Athena to efficiently pull large datasets, and utilized the boto3 library to seamlessly integrate with AWS services.

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.

EDUCATION

Kansas State University

Master of Science

Manhattan, KS

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

Bachelor of Science - Mechanical Engineering

Manhattan, KS

Dec. 2014

PROJECTS

CAN Tools Library 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.

DBC Editor Web 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. Deployed with Vercel: candied-app.vercel.app

SKILLS

Languages: MATLAB, Python, Javascript, Typescript, Simulink, Stateflow, SQL, L^AT_EX, C

Technologies: React, Next, CANape, HTML, CSS, Bootstrap, CAN, git, SVN, Tailwind, Jest, D3, Node, Jira, GitHub, Azure, Model Based Design, NodeJS, PyQt, Linux