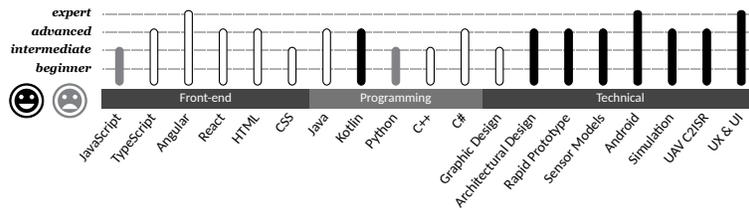


Technical Skills



Work Experience

Principal Software Engineer, Alion Science and Technology (2020 - Present)

- Served as the lead UX/UI architect for a large Intelligence, Surveillance, and Reconnaissance (ISR) project.
- Refactored outdated embedded browser technology.
- Updated underlying frameworks off of end-of-life versions, including: React, Node, Ag-Grid, Typescript
- Modularized the front-end to assist with Agile ownership, migration from clearcase to git, and testing. Leveraged the modules to migrate from a black-box-blob dependency tree to proper semantic-versioned Node package management backed by an air-gapped artifact repository (Nexus).
- Configured a fully automated CI process that deployed both a versioned library artifact and a documentation server on every merge. Developers develop. No busy work.
- Centralized, standardized, and modernized the program component library (React). Deployed a live demo server (Storybook) that served as living documentation of best practices. Dramatically improved compliance with design standards and response time for new features.
- Reconfigured Typescript, Java, and C++ projects to allow full-featured remote development in VS Code, as opposed to text editors.
- Led and mentored a small team of new-hires into roles as subject matter experts in UI/UX best practices across the program.

Lead Engineer, Keysight Technologies (2017 - 2020)

- Evaluated and selected cloud architecture for a large IoT network of scientific instruments.
- Designed an Angular data-binding directive that could automatically hook any widget to its corresponding backend entity, eliminating thousands of lines of code.
- Developed an Angular UI toolbox library that was integrated in dozens of projects company-wide. Instantly improved buy-in to company branding and UX best practices while drastically reducing implementation time compared to fragmented legacy UI solutions.
- Designed a plugin architecture that bypassed Angular framework to allow truly dynamic runtime loading of Angular libraries that are unknown at build-time.
- Developed a web-based window manager system to orchestrate interaction and layout of custom Angular plugin system.
- Created a schema to wrap hierarchical organization over a complex state machine involving thousands of flat settings. Allowed dramatically simplified user experience.
- Designed a query service to assist with query, filter, and paging of aforementioned hierarchical data.
- Created a table and tree adapter for the query service that allowed simple and rapid deployment of custom data models.
- Designed an Angular schematic framework built upon CDK that allowed most breaking change migrations to be defined in a simple configuration file. Dramatically reduced developer migration overhead and virtually eliminated consumer migration effort.
- Drafted an intent service that coordinated passing of data between appropriate applications in a workflow. Additionally, allowed user to deconflict applications that supported the user's intended data interaction.
- Championed proper semantic versioning within the company and helped improve existing CI to enforce and automate proper semver within the PR and gitflow process.
- Organized a mentor program to ensure that young employees had access to the support network they needed to excel beyond on-boarding.
- Subject matter expert for front-end architecture decisions.

Proprietor, Curator (2011 - Present)

- Designed a lightweight raw image decoder that can operate on limited Android resource budgets. Supports over 430 cameras and image formats previously lacking in Android. Custom C++ JNI decoder allows advanced memory management to enable decoding of extremely high-resolution images that exceed Android heap limitations.
- Developed a controller that can efficiently load images in high volume galleries, regardless of scrolling speed.
- Created a unique recycling bin that intelligently manages storage space and protects recent user actions allowing a user to operate without dialog interference.
- Developed an intelligent search engine that automatically finds raw images on a device and adds them to a database that manages metadata and allows advanced sorting and filtering of images.
- Created an interface that allows the Android app to manage images from native storage such as external media via a USB card reader.
- Designed a sleek interface that allows the user to quickly manipulate image metadata and classify images for later production.
- Developed a custom image viewer that intelligently caches high-resolution images and loads images in stages for a seamless experience. Zooming uses a custom region decoder to minimize memory footprints.
- Managed packaging and deployment on Google Play Store and Amazon App Store.
- Photo management app currently has over 250,000 installations.

Sr. Engineer, BAE Systems (2011 - 2012)

- Developed a weather model that implemented GRIB forecasts to create pre-calculated high resolution weather grids. Designed a highly efficient 4D interpolation technique (>90% calculation reduction) that allowed for a large grid to be processed on the order of a second. Model was also capable of processing encountered winds in realtime and expanding the measurements into the existing grid to improve local accuracy.
- Improved existing transverse Mercator projection transformations to utilize the Redfearn series convergence solution.

Engineer 3, Northrop Grumman (2007 - 2011)

- Developed a mission management interface (Tellus) for autonomous unmanned aerial vehicles built upon NASA's Worldwind software (3D globe similar to Google Earth). Tellus offered an infrastructure for displaying threats, tasking, and terrain within the scope of mission geography. The mission management component allowed graphical editing of waypoints, assisted least-cost routing for low observables, and validation/upload.
- Subject-matter expert on supplier auto-router, integrating the system within Tellus and designing interfaces and concepts of operation.
- Designed interfaces to quickly allow an operator to assess aircraft survivability and payload effectiveness. Interfaces could display statistics as well as integrate seamlessly with the 3D Tellus globe for situational awareness.
- Designed a high-fidelity model of a two-axis line-scan EO/IR sensor. Implemented the model in such a way that it could run real-time off vehicle feeds in simulation or process mission plans on the order of seconds for effectiveness analysis. In simulation the model could interface with MetaVR (COTS) to generate high-fidelity simulated imagery including movers and subjects of interest. Simulated imagery could stimulate operators to more reliably predict workload

impacts. Analytical mode was used to display effectiveness predictions to assist the operator during mission. Evolved into subject-matter expert on sensor concepts of operation.

- Rapidly prototyped above systems and interfaces years in advance of official development cycles to assist in Operator-In-The-Loop (OITL) events, which allowed direct customer feedback into development.
- Orchestrated OITL events which allowed customers to operate prototype systems well before delivery to perform mission goals within simulated environments reflective of real-world situations. Vehicles and payloads were simulated with high-fidelity models, while threats and tasking were developed from real-world intelligence. Feedback drove system development and concepts of operation.
- Managed simulation server farm and oversaw hardware requirements and upgrades.

Scientist, David H. Pollock Consultants (2005 - 2007)

- Developed a simple rotary flyout simulation that drove a black-body experiment that stimulated a man-portable surface-to-air missile connected via a custom harness to a three-axis gimbal for hardware-in-the-loop counter-countermeasure testing.
- Designed an experiment to automatically manipulate experimental devices for optical characterization.
- Designed a program to receive and replicate optical signals in real-time.

Research Experience

- Infrared Spectral Imaging of Mars, Rowan University, Research Assistant, 2004-2005
- Infrared Comet Spectroscopy, Rowan University, Research Assistant, 2003-2004

Education

Master of Aeronautical Science, 2018

Concentration, Human Factors
Embry Riddle Aeronautical University

Bachelor of Science, Physics, 2005

Minor, Astronomy and Computer Science
Rowan University

Clearance

Secret, Active
TS/SCI, Lapsed