Anthony J. Mandra

732-330-2064

Github   Web   Email   Download

Engineer with 20 years experience in a multitude of engineering fields; primarily serving as a UI/UX and data API architect. Enjoys mentoring, leading, and breaking down complex challenges into consumable pieces that continuously burn down risk; fail early and often, while you iterate to a solution. Penchant for efficiency, both for the user and the developer.

Technical Skills
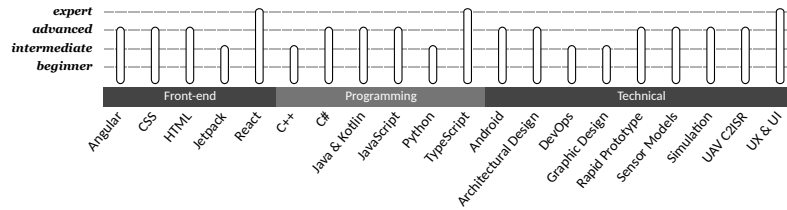
Work Experience

Principal Software Engineer, Alion Science and Technology (2020 - 2025)

- Served as the lead UX/UI architect for a large Intelligence, Surveillance, and Reconnaissance (ISR) project.
- Led and mentored a small team into roles as subject matter experts in UI/UX best practices across the program.
- Modularized the front-end to assist with Agile ownership, migration from clearcase to git, and introduced much needed testing (Jest/Cypress). Leveraged the modules to migrate from a custom dependency management solution to proper semantic-versioned Node package management backed by an air-gapped artifact repository (Nexus).
- Responsible for significant portion of hiring that saw division swell from about 50 to over 150.
- Organized a focus group that greatly improved collaboration between companies contributing to the program as well as users.
- Refactored web front end to remove server-coupled dependencies and enable thin client deployments of complex micro-service/micro-frontends.
- Designed an observable data abstraction layer that strangled out a deeply coupled legacy data source allowing the piecewise migration to a commercial database and dramatically reducing maintenance and attrition.
- Refactored a home-grown auto-gen capability to reduce thrashing and maintenance on merges.
- Migrated a monolith with a single build pipeline and artifact into a series of libraries and endpoints in a mono-repo with fully automated CI/CD pipelines that dramatically reduced build time and complexity.
- 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.

Lead Engineer, Keysight Technologies (2017 - 2020)

- Subject matter expert for front-end architecture decisions.
- Designed an Angular data-binding directive that could automatically hook any widget to it's corresponding backend entity, eliminating thousands of lines of code.
- Developed an Angular component library that was integrated in dozens of projects company-wide. An Angular schematic framework (CDK) allowed most breaking change migrations to be defined in a simple configuration file and automatically applied during updates. 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 tiling 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. Designed a query service to assist with query, filter, and paging that could be leveraged by a custom table or tree adapter that allowed simple and rapid deployment of custom data models with a dramatically simplified user experience.
- 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.
- Refined existing devops to enable full CI/CD pipelines.
- Evaluated and selected cloud architecture for a large IoT network of scientific instruments.

Sr. Engineer, Curator (2011 - 2017)

- Designed a custom C++ JNI raw image decoder that supports extremely high-resolution professional camera formats on limited Android resource budgets.
- Developed an infinite scrolling controller that can efficiently load images in high volume galleries
- 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 with a seamless region decoder to minimize memopry footprint.
- Managed packaging and deployment on Google Play Store and Amazon App Store.

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 for autonomous unmanned aerial vehicles built upon NASA's Worldwind which offered an infrastructure for displaying mission situation awareness with accurate geography. The mission management component allowed graphical editing of waypoints, assisted least-cost routing for low observables, and validation/upload. Analysis tools supported survivability and payload effectiveness assessments.
- Subject-matter expert on supplier auto-router, integrating the system and designing interfaces and concepts of operation.
- 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-coutermeasure testing.
- Designed an experiment to automatically manipulate experimental devices for optical characterization.
- Designed a program to receive and replicate optical signals in real-time.

Education

Master of Aeronautical Science (Human Machine Interface), 2018
Embry Riddle Aeronautical University

Bachelor of Science, Physics, 2005
Minor, Astronomy and Computer Science
Rowan University

Clearance
Secret, Active
TS/SCI, Lapsed