Anthony J. Mandra

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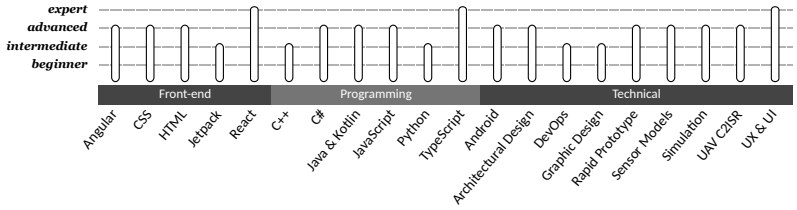
Engineer with 20 years experience in a multitude of engineering fields; primarily serving as an SME in ISR and survivability missions. Enjoys mentoring, leading, and breaking down complex challenges into consumable pieces that continuously burn down risk; fail early and often, while you iterate to a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

Technical Skills



Work Experience

Principal Software Engineer, HII (2020 - 2025)

- Served as the lead UX/UI architect for a large naval Intelligence, Surveillance, and Reconnaissance (ISR) project (Minotaur).
- 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, migrated from Clearcase to Git, and introduced testing (Jest and Cypress). Leveraged modules to transition from a custom dependency management solution to semantic-versioned Node package management backed by an air-gapped artifact repository (Nexus).
- Managed significant portion of hiring, expanding division from about 50 to over 150, with enhanced project capabilities and resource availability.
- 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 phased out a deeply coupled legacy data source allowing the piecewise migration to a commercial database and 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, significantly reducing 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, improving 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 automatically hooked widgets to their corresponding backend entities, eliminating thousands of lines of code and dramtically improving developer efficiency.
- Developed an Angular component library 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 organize hierarchical structures over a complex state machine with thousands of flat settings. Designed a query service to assist with filtering, enabling rapid deployment of custom data models with a 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 high-resolution professional camera formats on limited Android resource budgets.
- Developed an infinite scrolling controller that efficiently loaded images in high volume galleries, providing a seamless user experience.
- Created a recycling bin that managed storage space and protected recent user actions allowing a user to operate without dialog interference.
- Developed a search engine that automatically found raw images on a device and added them to a database, enabling advanced sorting and filtering of images.
- Created an interface that managed images from native storage, facilitating seamless access to external media via a USB card reader.
- Designed an interface that allows the user to quickly manipulate image metadata and classify images, streamlining the process for later production.
- Developed a custom image viewer that cached high-resolution images and loaded them in stages with a seamless region decoder, minimizing memory footprint.
- Managed packaging and deployment on Google Play Store and Amazon App Store, ensuring smooth distribution and accessibility for all users.

Sr. Engineer, BAE Systems (2011 - 2012)

- Developed a weather model that implemented GRIB forecasts to create pre-calculated high resolution weather grids. Designed a 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.
- Enhanced transverse Mercator projection transformations by utilizing Redfearn series convergence solution, resulting in improved accuracy and efficiency.

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.
- Served as subject-matter expert on supplier auto-router, successfully integrated the system and designed interfaces and concepts of operation, enhancing routing capabilities.
- 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 systems and interfaces years ahead of official development cycles, facilitating Operator-In-The-Loop (OITL) events, incorporating 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 that automatically manipulated experimental devices for optical characterization.
- Created a program that received and replicated optical signals in real-time, allowing a device to pass an optical tripwire undetected.

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