Ihab Awad

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Engineer, visionary, and maker. I build things for a living and for fun, and lead teams with enthusiasm and a growth mentality for myself and for others. I learn what I need to – usually but not always in engineering – to accomplish my goals. I seek interesting problems, and a place where my leadership style is appreciated and can thrive. Portfolio at https://ihab.github.io/ihab-awad/.

Work history

Verily, Inc., *Senior Software Engineer* (Feb 2021 - Sep 2025)

Camera software tech lead for next generation retinal camera (Oct 2023 - Sep 2025). Impact: System software from prototype to reliably running internal study. How: Software architect (full stack including firmware) for the entire system; designed innovative `Promise` abstraction for C++ allowing fearless concurrency; principled architecture for a medical IoT device with C++ embedded Linux, FreeRTOS microcontroller, and React UI. (Verily exited the business, ending the project.)

Camera software tech lead, Verily Retinal Camera (Feb 2021 - Sep 2023). Impact: Detected diabetic retinopathy in many patients, facilitating early treatment. Many more screened. How: Led the team through the successful release of the currently deployed “Bravo” product; designed and built optomechanical fixtures; designed and built PCBs for hardware-in-loop testing; filled in for all program functions when needed.

Google, Inc., *Senior Software Engineer* (Nov 2005 - Jan 2021)

Internal Boq Web, Wiz, and Modulesets Serving frontend development infrastructure (Jun 2017 - Dec 2020). Impact: Billions of high speed page views across Google apps like Search, Photos, Chat, and many others. Pioneered next-gen API studies. How: Lots of Java and JavaScript programming to improve the server/client side data driven rendering framework, and improve the systems that serve JavaScript and CSS modules via Google’s CDN. Conducted UI language studies for future APIs.

Project Wing drone delivery system (Jul 2015 - Jun 2017). Impact: Prototype drones flying missions reliably, leading to ongoing program success. How: Built Mission Management System, the onboard hub for the ground uplink/downlink and mission state. Fanatically test-driven embedded system written in Go, both enforces and documents the state machine of the bird.

Android Dialer team (Nov 2014 - Jun 2015). Impact: Google’s Project Fi and multi-SIM available to customers with coherent AOSP (Android Open Source Project) bindings. How: Led refactor of telephony subsystem, creating new Telephony and In-Call public APIs. Led system redesign for automated testability.

Founder and engineer on Google Caja JavaScript security tool (Sep 2007 - Nov 2014). Impact: Allowed secure third party content on Google Sites and Apps Script. Contributed to the ECMAScript standard. Made object-capability security known to the world. Improved Google Wave (unreleased). How: Founded the project with Mark Miller and Mike Samuel. Created rewriting compilers in Java and JavaScript

to enforce secure language subsets. Invented novel ways to build quasi-literal expressions AST match and substitution by taking advantage of the underlying language regex engine using a node “Gödel numbering” scheme. Deployed plugins for secure third-party content into Google products. Our demo to the Wave team garnered raucous applause, 2 days before Wave was canceled. Invented performance optimization for “record of closures” JavaScript object pattern, part of the process which made ECMAScript classes possible. Conducted research into secure user interface paradigms.

Google Reader Front End (Jul 2007 - Aug 2007). Brief stint helping develop new Reader features.

Thing Browser (May 2006 - Sep 2007). Impact: Learned about object-capability security, formed a relationship with Mark Miller, and inspired the Caja project. How: As a 20% project, designed and coded a complete Web browser and plugin system in Java, according to the model that “the Web is a graph of objects (Things), each identified by its URL and presenting Facets, each of which has a well-known API”. Code to support the Things and their Facets would be downloaded on demand. Created a multimedia editor Thing as a demonstration. A user could drag and drop Things onto an iMovie-like timeline as long as the Things supported the appropriate audio and/or video Facets, and changes in dependent objects would show up “live” in the movie. Enlisted a colleague to code to the API to create a spinning 3D protein molecule Thing that could be dragged onto the timeline.

Merlot shopping facet navigation (May 2006 - Jul 2007). Emerging product work, building natural language processing systems in C++.

Google Checkout reviews (Nov 2005 - Apr 2006). User interface work on emerging payments infrastructure.

Promoted twice, eventually to Senior Software Engineer (L5).

Stanford University, *Senior Software Engineer* (Jun 2003 - Nov 2005)

Stanford Microarray Database. Impact: Novel Open Source tool for browsing whole-genome datasets. How: Built Caryoscope, an Open Source Java application with a zooming GUI and a flexible API, accepting whole genome gene expression data.

Scimagix, Inc., *Software Engineer* (Dec 2001 - Apr 2003)

Scientific Image Management System (SIMS). Impact: Data entry made easy and reliable. System back end design maintained. How: Created interactive fault-tolerant data entry screen in Java. Served on the middleware team creating Java mappings to SQL databases.

Other projects

Airball (2014 - present)

Personal project to build a novel aircraft instrument providing situational awareness for pilots of small airplanes. Constructed low cost total air data probes, calibrated via wind tunnel tests, and high brightness flight deck displays. Visualization is completely novel and loved by pilots and flight instructors. Built all mechanical and aerodynamic components, electronics (including many revs of custom SMT PCBs), firmware, and Linux software.

Education

Master of Computer and Information Sciences, Department of Computer Science, University of Minnesota.

Master of Science, Department of Mechanical Engineering, University of Minnesota. Thesis topic: Design and construction of a 2DOF human-amplifier robot using high torque brushless DC motors.

Bachelor of Science, High Honors, Department of Mechanical Engineering, University of Florida.