Todd William Erickson

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OBJECTIVE

A professional software engineer with 3 years of experience at Amazon, 8 years of aerospace engineering experience at Boeing, and 2 engineering master's degrees, seeking to utilize skills with frontend and backend services, and the cloud services that allow both to operate at scale in the role of Software Engineer. With a passion for developing software to innovate and delight customers with expert knowledge in multiple languages.

SKILLS

Programming: Kotlin, Java, Typescript, JavaScript, Python, C, C++, shell, JSON, Git, IntelliJ IDEA, VS Code
Web: Node.js, React, Bootstrap, HTML, CSS, jQuery, i18n
Databases: SQL, Postgres, NoSQL, Dynamo DB
AWS: CDK, Lambda, API Gateway, Dynamo DB, SQS, S3, CloudWatch
Design and build: Hexagonal Architecture, Maven, Gradle, Lombok, Dependency Injection, Dagger2, Docker
Testing: Junit, Kotest, MockK, Cypress, Jest, Mockito
Engineering Analysis: MATLAB, Simulink, Simscape, Easy5, ANSYS CFX, ANSYS Fluent, ANSYS ICEM CFD, SolidWorks Simulation, Rhinoceros 3D, V-Ray, SolidWorks, CATIA

PROFESSIONAL EXPERIENCE

Amazon, Tempe, AZ   2021-Present
Software Development Engineer - Multi-Channel Fulfillment (MCF)

- As a part of an Agile DevOps team, designed, developed, and maintained software using Java, Kotlin, Typescript, Python, and AWS CDK. Other tasks include on call and maintenance of full CI/CD pipelines.
- Preserved 11% of MCF units by the creation of an MCF Shopify app and a Shopify fulfillment client adapter, created parts of the CDK infrastructure, added handling of Shopify's Mandatory GDPR webhooks, and implemented key steps in the Shopify app's installation, fulfillment creation, and order update workflows.
- Created a custom, HTTP based, generically typed GraphQL client in Kotlin. Created Shopify specific instantiation of client and templated initial calls which were used in the creation of 21 calls to Shopify.
- Designed and implemented highly demanded customer request of a more intuitive order ID which is capable of being searched for by merchants for use with Amazon fulfillment client orders, e.g. Shopify.
- Created functionality as a part of a productionalized Amazon fulfillment client for eCommerce platforms, using an event-driven architecture and functional programming in Kotlin. Work included retrieving available shipping options as well as existing shipments as a part of the fulfillment creation process.
- Designed and created a Typescript React website for the supplychain.amazon.com order management dashboard as a part of an effort to enable a total operating profit opportunity of $400M. Created using AWS CDK, Cypress integration tests, custom react hooks, and full i18n. Designed a GraphQL API as the backend interface, creating both a GraphQL schema and an Apollo server with a self-documenting GraphiQL IDE.
- Implemented functionality in another team's Java codebase to intake inventory to the correct fulfillment centers for merchants who require unbranded packaging-only shipments, helping Amazon avoid 860 tickets and avoid the loss of 3.5M shipping unit opportunities.

Boeing Commercial Airplanes, Seattle, WA
Propulsion Engineer   2011-2018

- Developed and maintained MATLAB, Simulink, and Simscape based fuel system analysis tools. Performed analysis on enterprise-wide aircraft fuel systems analysis using MATLAB and Simulink. Researched and consulted with enterprise customers on the effects of fuel properties on aircraft fuel systems.
- Created MATLAB class-based ISO 10303-21 STEP file interpreter for generating Simulink tubing geometry.

- Participated in Boeing's Product Development Grand Challenges Competition:
  - 2018 - Gathered and led a team of 5 engineers to analyze the application of patented technologies to a "future small aircraft". Presented net present values, risks, mitigations, and future development plans.
  - 2014 - Developed a family of 5 single aisle aircraft with 80% parts in common with 4 other engineers. Refactored MATLAB performance software to be class based and updated to be capable of finding a configuration's optimal cruise conditions. Led to 5 patents.
  - 2013 - Developed a 737 replacement aircraft. Developed MATLAB tools for both estimating the design's cost and performance. Received Best Overall Innovation: Product Differentiation award. Led to 3 patents.
  - 2012 - Developed a wildfire fighting artillery shell with a team of 5 engineers. Received Bold Ingenuity: Inspired Visionary Creativity award. Led to 2 patents.
- Modeled and performed certification analysis on the KC-46 aerial refueling system's surge pressures.
- Developed software for estimating the vapor pressure of fuels using MATLAB for use in aircraft certification.
- Took the initiative to learn HTML, CSS, JavaScript, and jQuery and update the Fuels Research group website, to improve client experience and ease site maintenance. Included a jQuery-based fuel property calculator.
- Presented at the Coordinating Research Council Aviation Meetings on the solubility of gases in fuels.

EDUCATION

University of Southern California, Los Angeles, CA

Master of Science Computer Science, GPA 3.57   Graduated 2020
- Implemented the processes, threads, virtual file system, and the virtual memory of the weenix kernel in C.
- Created Azure webapps using a news API and JavaScript, Flask, and Python; and React, Bootstrap, and Node.js.
- Built a full stack Android news aggregation app using Java with The Guardian and OpenWeatherMap APIs.
- Created an MLP artificial neural network to classify hand-written digits (0-9) using C++ from scratch.
- Built a Go 5x5 board game AI playing agent, implementing Monte Carlo and Minimax search using C++.
- Created a multi-process TCP and UDP socket networking system in C and C++.
- Researched and implemented GitLab CI/CD for the UCC Java code counting software built with Maven.
- Led two other students to create a React app for the COCOMO software cost estimation tool, integrating GitLab CI/CD to perform the DevOps tasks of build, test, and deploy on an Apache server.

Master of Science Aerospace Engineering, GPA 3.40   Graduated 2011
- Implemented a 2D pseudo-transient incompressible finite difference CFD code in MATLAB.
- AIAA Graduate Team Aircraft Design Competition: Designed a family of 4 all electric light sport aircraft and performed and instructed team members on how to run 2D and 3D CFD analysis.

Bachelor of Science Mechanical Engineering, Cum Laude, GPA 3.58   Graduated 2010
- AIAA Undergraduate Team Aircraft Design Award: Designed a family of four 737 replacement aircraft including novel features such as laminar flow wings and over-the-wing open fan engines.

PATENTS

System and method for augmenting a primary powerplant	Pending	US 20180118364
Fire-retarding artillery shell	Granted	US 10955227
Laterally reinforced variable pitch rotor	Granted	US 10018058
Systems and methods for determining sizes and shapes of geodesic modules	Granted	US 9965582
Systems and methods for manufacturing a tubular structure	Granted	US 9957031
Integrated pusher turbofan for aircraft	Granted	US 9950800
Contra-rotating open fan propulsion system	Granted	US 9835093
Vibration dampening for horizontal stabilizers	Granted	US 9828084
Geodesic structure forming systems and methods	Granted	US 9789548