

# Todd William Erickson

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## PROFESSIONAL EXPERIENCE

### **Amazon - Multi-Channel Fulfillment (MCF) - Software Development Engineer** **2021-2023**

- As a part of an Agile DevOps team, designed, developed, and maintained software for using Java, Kotlin, Typescript, Python, and AWS CDK. Other tasks include on call and maintenance of full CI/CD pipelines.
- Designed and created a Typescript React website for the [supplychain.amazon.com](https://supplychain.amazon.com) order management dashboard as a part of an effort to enable a total operating profit opportunity of \$400MM. 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 GraphQL IDE.
- Created functionality as a part of the creation of a productionalized eCommerce platform for Amazon fulfillment client in Kotlin, including getting available shipping options and existing shipments as a part of the fulfillment creation process. Created contract models and calls to the Shopify Adapter, and updated database in order to get all the SKUs as part of the app installation process and to update order status.
- For the creation of a Shopify Amazon fulfillment adapter and an MCF Shopify app to preserve 11% of MCF units, created the API Gateway CDK infrastructure, added handling for Shopify's Mandatory GDPR webhooks, and implemented key steps in the Shopify App's installation and fulfillment creation 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 very 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.
- Implemented a call to a new service 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 3.5MM shipping unit opportunities.

### **Boeing Commercial Airplanes – Propulsion Engineer** **2010-2018**

- 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 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 engines. 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.

## SKILLS

**Programming:** Kotlin, Java, Typescript, JavaScript, Python, C, C++, shell, SQL, JSON, Git, IntelliJ IDEA, VS Code

**Web:** Typescript, JavaScript, Node.js, React, Bootstrap, React-Bootstrap, HTML, CSS, jQuery, i18n

**AWS:** AWS CDK, AWS Lambda, AWS API Gateway, AWS Dynamo DB, AWS S3, AWS CloudWatch

**Design and build:** Hexagonal Architecture, Maven, Gradle, Lombok, Dependency Injection, Dagger2

**Testing:** Junit, Kotest, MockK, Cypress, Mockito

**Engineering Analysis:** MATLAB, Simulink, Simscape, Easy5, ANSYS CFX, ANSYS Fluent, ANSYS ICEM CFD, SolidWorks Simulation, Rhinoceros 3D, V-Ray, SolidWorks, CATIA

## 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 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 Little-Go (5x5) AI Go 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, building 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, 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 4 737 replacement aircraft including novel features such as laminar flow wings and over the wing open fan engines.

## PATENTS

<i>System and method for augmenting a primary powerplant</i>	Pending	US 20180118364A1
<i>Fire-retarding artillery shell</i>	Granted	US 10429160B2
<i>Laterally reinforced variable pitch rotor</i>	Granted	US 10018058B2
<i>Systems and methods for determining sizes and shapes of geodesic modules</i>	Granted	US 9965582B2
<i>Systems and methods for manufacturing a tubular structure</i>	Granted	US 9957031B2
<i>Integrated pusher turbofan for aircraft</i>	Granted	US 9950800B2
<i>Contra-rotating open fan propulsion system</i>	Granted	US 9835093B2
<i>Vibration dampening for horizontal stabilizers</i>	Granted	US 9828084B2
<i>Fire-retarding artillery shell</i>	Granted	US 9816791B2
<i>Geodesic structure forming systems and methods</i>	Granted	US 9789548B2