Matthew Flesher

Senior Software Engineer

(609) 661-1649
mrflesher@umich.edu

Senior Software Engineer with approximately 10 years of experience in Kubernetes platform engineering and cloud infrastructure automation. Skilled in building CI/CD pipelines with GitLab, GitHub Actions, and Jenkins, and automating scalable systems using Terraform and Ansible across AWS and on-premise environments. Proven leader in operational excellence, delivering reliable, observable distributed solutions for mission-critical applications.

PROFESSIONAL EXPERIENCE

Senior Software Engineer | Test Director

Federal Aviation Administration (FAA) - Atlantic City, NJ August 2014 – Present

- Spearheaded cloud-native modernization of the FAA's SWIM platform by automating multi-node Kubernetes cluster provisioning using Terraform and Ansible, reducing infrastructure setup time by over 85% and supporting 99.99% system uptime.
- Architected CI/CD pipelines with GitLab CI and integrated automated testing (Selenium, Pytest), enabling zero-touch deployments and accelerating release cycles, while reducing manual errors by 90%.
- Delivered 20+ microservices and serverless functions (OpenFaaS, AWS Lambda) equipped with CI/CD, observability (Prometheus, Grafana), and logging, reducing feature release time and boosting platform reliability.
- Championed observability using the EFK stack and Prometheus/Grafana, cutting mean time to resolution (MTTR) through real-time monitoring and root cause diagnostics of FAA-critical services.
- Developed and deployed a machine learning model to predict flight delays using historical flight and weather data, building a scalable data pipeline using AWS S3 and Lambda for data ingestion and preprocessing. Trained and hosted the model using Amazon SageMaker to streamline deployment and model versioning.
- Mentored 10+ junior engineers and implemented scalable test automation strategies, increasing test coverage by 5x and reducing post-deployment defect rates by 70%.
- Led the integration of DevSecOps practices into the SDLC, including continuous vulnerability scanning, reducing security incident exposure and improving audit readiness.
- Developed custom validation tools to test latency, content, and schema compliance of XML-based flight data systems used by 10+ international aviation partners, ensuring 100% schema adherence.
- Managed full SDLC for distributed FAA systems across cloud and on-prem environments, coordinating 4+ Agile teams and delivering projects on schedule.
- Deployed microservices architecture that increased component reuse, reducing development effort on new systems by ~30%.
- Created infrastructure automation scripts for AWS and on-premise environments, eliminating 80% of manual configuration drift and reducing downtime during deployments.
- Collaborated with FAA stakeholders to architect secure AWS environments using IAM, VPC, S3, and EC2, achieving compliance with NIST and FAA security standards.
- Ensured 24/7 uptime for mission-critical services through secure AWS architecture design.

EDUCATION

Master of Science, Computer Engineering

University of Michigan – Dearborn

2016-2019

GPA 3.69

Focus: Intelligent Vehicle Systems

Major Subjects Taken: Pattern Recognition and Neural Networks, Embedded Systems, Intelligent Systems, Data Mining, Vehicle Electronics, Cloud Computing, Computer Networks, Computer Architecture, and Information Engineering

Bachelor of Science, Computer Science

Stockton University

2012-2015

GPA 3.77 – Cum Laude

Focus: Intelligent Vehicle Systems

Major Subjects Taken: Calculus I and II, Discrete Math, Java Programming I & II, Data Structures, Principles of Networking, Interactive Game Design, Software and Security Engineering, Information Assurance and Security, Linear Algebra, Web Application Engineering, Foundations of Computer Science, Artificial Intelligence, Computer Architecture, and Computer Organization

Software Engineer - Intern June 2014 – August 2014

Honeywell - Mount Laurel, New Jersey

- Repurposed C code for a smart watch prototype, integrating software with hardware to support scalable AI platform development
- Collaborated with cross-functional teams to prototype embedded systems, building early expertise in low-level programming.

AREAS OF EXPERTISE

Languages and Programming:

- Full Stack Development – Strong programming skills in Python (proficient), Bash (proficient), Go (working knowledge), with a solid understanding of distributed systems design. Proficient in C/C++, C#, .NET, Flask, Java EE, Spring, Angular, ReactJS, Typescript, JavaScript, CSS, HTML, Jinja, and Node.js.
- Data formats and markup languages – JSON, XML, YAML.

Cloud Tools and Platforms:

- Cloud Computing Platforms – Strong AWS fundamentals including IAM, VPC, RDS, S3, CDN, Lambda, EC2.
- Infrastructure as Code (IaC) – Extensive experience with Terraform and Ansible for building automation software for the cloud.
- Containerization – Expertise with Docker.
- Container Orchestration – 7+ years of experience with Kubernetes (k8s) based computing platforms tooling/APIs development, including Helm.
- SQL and NoSQL Databases – Proficient with PostgreSQL, MongoDB, DynamoDB.
- Elasticsearch, FluentD, and Kibana (EFK) Stack for search, logging, and analytics.
- Monitoring with Prometheus and Grafana – Operational expertise in observability and logs ingestion at scale.

Methodologies:

- Agile Methodology – Expertise as Product Owner, Team Lead, Scrum Master, and Developer in Agile environments.
- DevSecOps Methodology – Expert knowledge of DevOps principles, tools, and methodologies.
- Software Development Lifecycle (SDLC) – Deep understanding of requirements analysis, planning, design, development, testing, and deploying highly scalable, low-latency, and reliable systems.
- Service Oriented Architecture (SOA) – Microservices, Serverless, REST APIs, and SOAP.
- Operational Ownership – Passionate about operational reliability and production excellence.

CI/CD and Testing:

- Continuous Integration / Continuous Deployment (CI/CD) – Extensive experience designing and implementing CD pipelines using GitLab, Jenkins, and GitHub Actions.
- Automated Testing – Proficiency in Unit (Pytest, JUnit, Jasmine, Jest), Integration, and UI (Selenium and Cypress) testing.
- Functional and Performance Testing – Experience with load testing including capacity, stress, soak, and volume testing.

Systems and Networking:

- Traffic Engineering Solutions – Good understanding of Load Balancing and Layer7 proxies.
- Proficiency with Linux environment.
- Solid understanding of large scale k8s observability platforms.

CERTIFICATIONS

LambdaTest Test Automation Professional Certificate

OTHER RELEVANT EXPERIENCE

US Marine Corps Reserves – Fort Lewis, Washington

Engineering – Bulk Fuel Specialist

September 1997 – August 2001

Cultivated discipline and leadership in high-stress settings, ensuring operational readiness and adherence to safety protocols for critical high-pressure fueling systems in mission-critical situations.

Developed resilience under pressure and operational discipline, skills that directly support the demands of engineering roles requiring precision and reliability in complex, high-stakes environments.

12 Inch Tails – A Southern New Jersey Cat Rescue

Volunteer Web Application Developer | Board Member

July 2022 - Present

12 Inch Tails is a local cat rescue focused on finding homes for our local feline friends.

Develop and maintain a website (www.12inchtails.com)

Designed and maintained cloud-native web applications for end users and internal rescue staff with React.js and AWS API Gateway, Lambda, S3, DynamoDB, Route53, IAM, CloudWatch, CloudFront, and AppSync.

Serve as a board member and developer to work to accomplish the goals of the company