Elliot Trapp

Los Angeles, CA • mail@elliottrapp.com • linkedin.com/in/elliot-trapp • www.elliottrapp.com

Software Engineer

Senior Software Engineer with 8 years of experience at NASA JPL and industry who blends technical experience, exceptional communication, and leadership skills. He has written code to run on Mars, designed the cloud infrastructure scientists use to explore data from Jupiter, and developed visualizations Presidents rely on to watch robots land on another planet.

WORK EXPERIENCE

Optimal Dynamics **Los Angeles, CA • 07/2025 - Present**
Software Engineer

- **Automated UAT Tool Development:** Spearheaded the development of an automated User Acceptance Testing (UAT) tool that enables deployment engineers to define and execute tests, transforming a multi-month deployment timeline into a **streamlined 7-day process**. Collaborated with cross-functional teams to ensure the tool effectively assesses deployment readiness, enhancing operational efficiency in logistics optimization.
- **Knowledge Base Integration:** Designed and implemented an OpenSearch-based knowledge base to provide agents with contextual information about the company and deployment processes, facilitating informed decision-making and improving the accuracy of test execution in the optimization software deployment lifecycle.

NASA Jet Propulsion Laboratory **Pasadena, CA • 07/2019 - 07/2025**
Software Engineer

- **Robotics Simulation & Research:** Collaborated in a robotics research lab focused on simulation, **enhancing physics simulation code** to improve the accuracy of robotic behavior modeling in unstructured environments, **supporting the development of autonomous navigation algorithms.**
- **Flight Software Development:** Delivered Python autocode modules to write C flight software for the Mars Sample Return Lander (SRL) project, **enabling telemetry uplink and downlink from the surface of Mars**, and contributing to the development of autonomous systems for planetary exploration.
- **Technical Leadership:** Mentored a team of **5 engineers** and owned the strategic roadmap for **6+ multi-quarter development cycles**, balancing new features with infrastructure improvements to ensure long-term system health and operational excellence in robotic applications.
- **Observability & Reliability:** Engineered a containerized microservice architecture and a comprehensive observability stack **(Grafana, Prometheus)** that reduced incident response time by **50%**, ensuring high availability for mission-critical robotic systems in extreme environments.

EDUCATION

Master of Science in Computer Science
DePaul University
Chicago, IL
01/2016 - 01/2018

Master of Arts in Philosophy
The New School for Social Research
New York, NY
01/2012 - 01/2015

Bachelor of Arts in Philosophy, Political Science, Mandarin
DePaul University
Chicago, IL
01/2007 - 01/2011

SKILLS

Languages & Frameworks:
Python (Expert), Node.js, C, C++, Java, Flask, FastAPI, Boto3, Pytest

Cloud Infrastructure & IaC:
AWS, EC2, S3, IAM, Lambda, ECS, VPC, Terraform, Docker, Kubernetes (Familiarity)

CI/CD & DevOps: Jenkins, GitHub, GitLab, Puppet, Confluence, JIRA, Python (Expert), Bash

- **Scalable Systems Design:** Designed and operated backend infrastructure for APIs serving up to **99,000 requests per minute**, ensuring reliable, high-throughput data access for global scientific analysis and demonstrating expertise in building scalable, distributed systems critical for real-time robotic decision-making.
- **Cloud Infrastructure & IaC:** Architected secure and scalable AWS infrastructure using **Terraform**, enforcing IaC best practices in collaboration with security teams to ensure compliance. Led cloud optimization initiatives that saved **$122,333** annually by re-architecting data flows and right-sizing clusters, enhancing system efficiency for autonomous robotic applications.

Johnson Space Center **08/2018 - 01/2019**

Software Engineering Intern

- **Neural Network Research:** Developed a recurrent neural network model to classify astronaut cognitive workload using pupillometry image data, enhancing space mission safety and efficiency. Authored comprehensive Python and MATLAB libraries to automate data cleaning, ingestion, and verification processes, improving data processing efficiency and accuracy for robotic applications.

CONFERENCE PUBLICATIONS

Insights from Three Decades of Operating and Modernizing a Multi-Mission Distributed Object Store
03/2026
IEEE Aerospace Conference

PROJECTS

Docker Home Media Server

Developed and administered a home server for friends and family running 13 containerized microservices to deliver a local and private alternative to commercial cloud application providers. Secured with LetsEncrypt TLS/SSL certificates behind a reverse proxy and GlueTUN VPN and firewall.

Databases & Observability:
Grafana, Prometheus, Loki, ElasticSearch, Kibana, Telegraf, PostgreSQL, MySQL, TimescaleDB, InfluxDB, Redis, SQLite

AWARDS

Team Award
09/2022
NASA JPL

Team Award
06/2022
NASA JPL

Voyager Award
04/2022
NASA JPL

Team Award
09/2021
NASA JPL

CERTIFICATIONS

Open Water Diver
08/2021
PADI

AWS Advanceduser
01/2021
NASA JPL