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# Elliot Trapp

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## Senior Software Engineer

NASA JPL Software Engineer with 6 years of experience 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

### **NASA Jet Propulsion Laboratory      Pasadena, CA • 07/2019 – Present** **OCS Software Engineer**

- Built Node.js REST APIs that serve up to 99K requests per minute, enabling a multinational team of scientists to reliably analyze and save priceless data from the surface of Mars.
- Slashed the Mars 2020 project's operational costs by \$122,333/year by right-sizing Elasticsearch clusters and decommissioning two AWS accounts.
- Administered \$423,000/year in AWS resources across 5 distinct accounts, achieving >99.9% uptime, delivering reliable service to 2,228 users conducting planetary science.
- Collaborated with cross-functional deployment and security teams to partner on Infrastructure as Code (IaC) practices, ensuring consistent deployment standards.
- Scoped 6 development cycles to effectively balance feature requests, technical debt, and developer resources, reliably implementing dozens of new features and fixes over 2 years.

### **Darkroom Visualization Software Developer**

- Completed systematic industry trade study, evaluating various commercial technologies along multiple domains including security, scalability, feature set, and community support.
- Facilitated collection of initial system requirements and design across dozens of stakeholders, maximizing customer buy-in, securing project's long-term funding base.
- Engineered a containerized microservice architecture to proactively monitor and alert operations personnel, enhancing observability and reducing incident response time by 50%.
- Designed dozens of data visualization panels across 5 Grafana dashboards, streamlining communication of complex data, improving user experience and system traceability.

### **DOM Ground Data System Engineer**

- Mentored a team of five high-impact engineers to deliver customer-centric support for 12 active flight missions, ensuring operational excellence and reliability.

## SKILLS

### **Frontend**

- Bash
- C
- C++
- Java
- JavaScript
- Python
- Ruby
- TypeScript

### **Backend and Databases**

- Django
- Elasticsearch
- Kibana
- MongoDB
- MySQL
- Node.js
- Perl
- PostgreSQL
- TimescaleDB

### **DevOps and Infrastructure**

- Docker
- Git
- GitHub
- Grafana
- Jenkins
- JIRA
- Prometheus

- Maintained 30-year-old mission-critical data management infrastructure, delivering 24/7 support, enabling more than 25K daily CRUD operations from a single mission.
- Took the initiative to single-handedly author a custom monitoring tool, minimizing the ops team's cognitive load, freeing up tactical resources to focus on strategic objectives.

#### **SRL Flight Software Developer**

- 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.

#### **EDL Visualization Software Developer**

- Integrated orbiter telemetry into a Mars Entry Decent and Landing (EDL) visualization, displaying the real-time location of the MRO and MAVEN orbiters the night we landed on Mars.

## **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.

## **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

- Puppet
- Terraform

## **AWS**

- Cloud Formation
- Cloud Watch
- DynamoDB
- EC2
- ECS
- IAM
- Lambda
- RDS
- S3
- VPC

## **CERTIFICATIONS**

#### **Open Water Diver**

08/2021

PADI

#### **AWS Advanceduser**

01/2021

NASA JPL

## **AWARDS & SCHOLARSHIPS**

#### **Team Award**

09/2022

NASA JPL

#### **Team Award**

06/2022

NASA JPL

#### **Voyager Award**

04/2022

NASA JPL

#### **Team Award**

09/2021

NASA JPL