# Lyle Barner

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## Technical Skills

**Languages:** Python, Java, C/C++, TypeScript/JavaScript, Node.js, SQL, R, Shell, Jupyter, MATLAB, Fortran
**Technologies:** Linux, Docker, PyTorch, TensorFlow, Keras, GitHub, Electron, TestRail, Jira, Jenkins, NIST 800.53, AS9100

## Experience

**NASA - Jet Propulsion Laboratory** **Oct. 2016 – Present**
*Lead Full-Stack Developer and Software Assurance Researcher* *Pasadena, CA*

- Lead team of 2-3 engineers in the ongoing development of a software quality analysis toolset using Python and Electron
  - Plan software development sprints to offer new features while managing open-source contributions
  - Implement code changes and report status updates to track progress against planned milestones
  - Maintain regression test suite to ensure requirements have been satisfied and verify backward compatibility
- Manage product release and deployment for 10+ mission teams and respond to troubleshooting tickets
- Organize roadshows and training materials to present product offerings to stakeholders
  - Solicit user feedback on planned software enhancements and feature roadmaps
  - Conduct training sessions for mission software development teams to streamline onboarding
- Lead research teams responsible for over $500k in strategic investment efforts designed to further technical knowledge
- Enhance the reliability of mission-critical systems through a data-driven approach to software quality assurance
  - Support software development activities and milestones through the usage of automated assurance techniques
  - Perform software security assessments to assist teams in identifying critical vulnerabilities and assessing system risk
  - Develop techniques and procedures to make software assurance activities more efficient
- Subject matter expert on the deployment, integration, and maintenance of code quality analysis tools
  - Examine software for critical reliability issues, cybersecurity vulnerabilities, and general software quality analysis
  - Assist with integration into CI/CD pipelines, data analysis, and generation of risk ratings
- Improve software development infrastructure by leading the NASA Software Tools Working Group

**Northrop Grumman** **Aug. 2014 – Oct. 2016**
*Lead Modeling and Simulation Engineer* *Redondo Beach, CA*

- Designed Monte Carlo simulations of air-to-air encounters to assess technology readiness of far future systems
- Analyzed large data sets to identify patterns, trends, and correlations and presented findings to stakeholders monthly
- Formulated test plans to validate internally developed models against commercial simulation products
- Incorporated software modifications into existing simulators to enhance capabilities and introduce new functionality

**Vencore** **Feb. 2012 – Aug. 2014**
*Systems Engineer* *King of Prussia, PA*

- Researched and implemented various orbital models and algorithms for in-house simulation tools
- Constructed and executed verification and validation plans to evaluate the performance of software modifications

## Research Projects

**Secure Coding Guideline**, *Jet Propulsion Laboratory* **Oct. 2018 - Sept. 2019**

- Established institutional-level Secure Coding Guideline for use by all mission software development activities
- Created static code analysis configurations to verify compliance with coding guidance to aid in deployment
- Evaluated vulnerability data collected by automated security scans to better understand critical concerns

**Software Bill of Materials (SBOM)**, *Jet Propulsion Laboratory* **Dec. 2023 - Sept. 2024**

- Investigated tools and techniques for generating SBOM data as it applies to the mission software environment
- Developed proof-of-concept toolchain for analyzing dependency quality using continuous integration
- Established recommended guidance for supply chain risk management based on SBOM data

**Static Code Analysis Usage**, *Jet Propulsion Laboratory*

- Examined the usage and effectiveness of binary analysis tools for scenarios where source code is not available to review
- Analyzed benchmarking data to study the efficiency of various tools with respect to true and false positive rates

## Education

**UCLA**, *M.S in Data Science* **Mar. 2023 - Aug. 2025**
**Penn State University**, *M.S. in Software Engineering* **Jan. 2014 - Dec. 2016**
**Penn State University**, *B.S. in Electrical Engineering* **Aug. 2007 - May 2011**

## Awards

**NASA Group Achievement Awards:** Aug. 2019, Jun. 2024
**Jet Propulsion Laboratory Discovery and Team Awards:** May 2017, Sept. 2017, Sept. 2018
**Northrop Grumman Performance Reward Program Awards:** Dec. 2015, Apr. 2016