

# AVERY REYNA

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## EXPERIENCE

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### UC San Diego

Jun 2025 – Present

*Independent Researcher*

*San Diego, CA*

- Led a research project **studying the agentic coding workflows of experienced developers**, designing observational studies and a large-scale survey to analyze their strategies, goals, and sentiments when leveraging AI in software construction
- Developed **Python**-based **GitHub GraphQL** scraper with parallel processing to extract over **2.5k developer emails** from thousands of AI agent and agentic coding repositories for survey recruitment purposes
- Extracted actionable insights from expert developer interviews by **systematizing prompt transcriptions** and **identifying recurring patterns** in how experienced practitioners structure queries to achieve quality standards with AI coding agents

### Capital One

Aug 2023 – Present

*Software Engineer*

*McLean, VA*

- Extended in-house metrics dashboard to all company users using **React** and **TypeScript**, accelerating **60% reduction** in third-party monitoring tool reliance by democratizing data quality insights previously limited to admin access
- Developed the first iteration of custom in-house monitoring system using **React**, **TypeScript**, and **Python** to replace Grafana dashboards which implemented critical cloud asset visibility metrics for admins of our self service platform
- Enhanced data quality monitoring by developing **Spark** health check scripts and New Relic dashboard integration, enabling compliance tracking of unmonitored datasets and **reducing validation time by 50%**
- Developed **Python** logging system to monitor S3 dataset processing memory with CloudWatch alerts, analyzed findings to identify top **15% most memory-intensive datasets**, and optimized Lambda configuration to **reduce costs by 40%**
- Engineered a parallel processing solution in **Python** to streamline configuration file parsing, reducing runtime from four minutes to under one minute (**75% improvement**) and decreasing system timeout issues by **90%**
- Developed a custom MITRE-based security heatmap visualization tool using **Angular** and **React** to identify vulnerabilities, implementing stakeholder-driven features including saved layer panels and custom styling for streamlined threat discovery
- Served as **primary technical point of contact** for custom metrics dashboard and data quality platform, **managing 50+ weekly support inquiries** across company Slack channels and conducting stakeholder calls to resolve monitoring issues

## PROJECTS

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### Self Adjoint Operator

May 2025 – Present

*Independent Researcher*

*Washington, DC*

- Palestra — Coding education platform with **TypeScript**, **Claude** integration, and automated codebase generation that helps developers practice and improve their coding skills through hands-on exercises
- Rerank — Text summarization tool built with **React** and **D3.js** that compares **TextRank**, **LexRank**, and **BART** algorithms with interactive visualizations, quality metrics analysis, and dataset analytics to help extract key insights from documents
- Perceptor — Interactive CLI coding assistant using **JavaScript** and the Socratic method to guide beginner programmers through learning to code by asking questions and encouraging discovery rather than providing direct answers
- Scrutinize — Document annotation platform with **React** and **DeepSeek** integration that generates AI-powered essays and provides interactive markup capabilities with structured editing codes for collaborative review and feedback workflows
- Specter — Ephemeral **Deepseek-based** AI writing assistant built with **TypeScript** and deployed on **Vercel** that provides a distraction-free environment for the writing process with intelligent suggestions and contextual support
- Meta Measure — Research analysis tool using **Next.js** and Anthropic's **Claude API** that visualizes research topics across methodology and novelty dimensions, helping researchers identify gaps and opportunities in their field

## PAPERS

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Ruanqianqian (Lisa) Huang, **Avery Reyna**, Sorin Lerner, Haijun Xia, and Brian Hempel. "Don't Vibe, Plan: How Professional Software Developers Use AI Agents in 2025." *Under submission to OOPSLA '26. arXiv preprint.*

## SKILLS

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**Backend:** Python, Java, Spark, Lambda, S3, GraphQL, Pandas, NumPy, scikit-learn

**Frontend:** React, TypeScript, Angular, Material UI, React Native

**Infrastructure:** AWS (CloudWatch, Lambda, S3), New Relic

## EDUCATION

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### University of Central Florida

*Bachelor of Science – BS, Social Sciences*

Orlando, FL

2018 – 2023