

AVERY REYNA

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EDUCATION

University of Central Florida

Bachelor of Science – BS, Social Sciences

Orlando, FL

2018 – 2023

- Relevant courses: Scope and Methods of Political Science, Object Oriented Programming, Ethnographic Methods

WORK EXPERIENCE

Capital One

Software Engineer

Aug 2023 – Present

McLean, VA

- 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 complex monitoring issues
- 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
- 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%

RESEARCH EXPERIENCE

UC San Diego

Independent Researcher

Jun 2025 – Present

San Diego, CA

- Led mixed-methods research project studying experienced developer-AI programming workflows, designing observational studies and a large-scale survey to analyze developer strategies and goals when leveraging agents to develop software
- 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

University of Central Florida

Undergraduate Researcher

Jan 2021 – May 2023

Orlando, FL

- Developed a novel data and machine learning-based early warning forecasting platform that estimates the monthly risk of illegal leadership turnover and overthrows of government for 201 countries across the globe
- Designed and implemented data pipelines using Pandas and NumPy that transformed raw coup data into visualizations that were used for internal reports and articles for online publications with over 500k readers a year
- Utilized data collected from 500 coup events to exhibit that qualitative attributes, such as whether the current regime came about due to a coup, exercise pronounced impacts on coups independent of how recent the last coup was
- Qualitatively coded 50,000 Instagram direct messages to create an ecologically valid dataset using human-centered design principles to provide insight into teens' social media interactions and train models to detect online risks
- Led an independent machine learning project that comparatively analyzed two text summarization models in order to test its perceived utility for data annotation and qualitative analysis of large datasets more broadly
- Led systematic literature review of 75 studies examining COVID-19's effects on substance abuse patterns among underserved populations, identifying key risk factors across demographic groups to support evidence-based intervention strategies

XR Access

REU Participant

Jun 2022 – Aug 2022

New York, NY

- Led frontend development with React.js, TypeScript, and Material UI to build clean, interactive, and accessible user interfaces for projects across the lab dedicated to building new interactive technologies and tools for disabled users
- Designed and conducted nine usability studies of two web applications that help blind and low-vision users consume and produce web content on unknown desktop user interfaces via audio spatialization and directional navigation
- Created a mobile application with React Native and Socket.io for a 20-person study that discovered new categories of assistive technologies that can create connection between sighted and blind and low-vision users in exploration

- Used tools of computational topology, statistics, and machine learning to discover communities of interest for fair representation in political redistricting and better legislation for marginalized groups in the United States
- Developed data pipelines using Python, Pandas, and NumPy to specify parameters for algorithms, add flags to imported datasets based block group clusters, and calculated summary statistics for each detected political district
- Led Singular Value Decomposition analysis efforts by engineering Python scripts on a 13-variable dataset to better understand how much variance was captured by every Principal Component being drawn along each axis

CONFERENCE PAPERS & PREPRINTS

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.*

Yuanyang Teng, Connor Courtien, David Rios, Yves M. Tseng, Jacqueline Gibson, Maryam Aziz, **Avery Reyna**, Rajan Vaish, and Brian Smith. "Help Supporters: Exploring the Design Space of Assistive Technologies to Support Face-to-Face Help Between Blind and Sighted Strangers." *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24).*

Arnavi Chheda-Kothary, David Rios, Kynneddy Simone Smith, **Avery Reyna**, Cecilia Zhang, and Brian Smith. "Understanding Blind and Low Vision Users' Attitudes Towards Spatial Interactions in Desktop Screen Readers." *The 25th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '23).*

PUBLIC SCHOLARSHIP

Avery Reyna. "The Threat of Artificial Intelligence Is Not Just Real, It's Here." March 29, 2023. *The Loop.*

Avery Reyna. "Interdisciplinary Social Science and the Limits of Quantitative Research." October 25, 2022. *The Loop.*

Salah Ben Hammou and **Avery Reyna**. "Anti-Coup Strategies Should Address Civilian Coup Allies." July 20, 2022. *Just Security.*

Avery Reyna and Salah Ben Hammou. "Reflecting on Coup Risk in Mali." June 14, 2022. *Political Violence at a Glance.*

Avery Reyna. "Integrated Data in the United States: A Look at New York's Workforce Portal." May 13, 2022. *New America.*

Avery Reyna. "Latin America's Vaccination Efforts: What to Know." May 20, 2022. *Council on Foreign Relations.*

TALKS

Alexis Wood, **Avery Reyna**, Aya Konishi, David Retchless, and Jim Thatcher. "Cartographic Limits and Interdisciplinary Science: Maps and Mathematics in Pursuit of Social Justice." *North American Cartographic Information Society (NACIS '22).*

Jonathan Powell and **Avery Reyna**. "Legacies of Instability: Military Coups and Regime Consolidation in the Modern World." *International Studies Association South (ISA South '22).*

PRESENTATIONS

Avery Reyna and Jonathan Powell. "Applied Machine Learning to Detect Risk of Illegal Leadership Turnover." *UCF Summer Undergraduate Research Poster Showcase '22.*

Avery Reyna, Ashwaq Alsoubai, and Pamela Wisniewski. "Comparative Analysis between TextRank and LexRank: Testing Utility of Text Summarization Models for Data Annotation." *UCF Student Scholar Symposium '22.*

Carlson Sharpless, Komila Khamidova, **Avery Reyna**, Afsaneh Razi, and Pamela Wisniewski. "Adolescent Online Safety: Expanding the Knowledge Base and Developing Machine Learning Algorithms." *UCF Showcase of Undergraduate Research Excellence '21.*

AWARDS & HONORS

Senior Scholar – UCF School of Politics, Security, and International Affairs	2023
Summer Undergraduate Research Fellowship – UCF Office of Undergraduate Research	2022
Political Science Endowed Scholarship – UCF School of Politics, Security, and International Affairs	2020
Leader-in-Residence, Hispanic Association of Colleges and Universities	2020
Excellence in Action Award – UCF Office of Diversity Education and Training	2020
Burnett Honors Scholar – Burnett Honors College	2019