

Avery Reyna

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EDUCATION

University of Central Florida

Bachelor of Science in Computational Social Science

June 2018 – December 2023

Orlando, FL

RESEARCH EXPERIENCE

Computer-Enabled Abilities Laboratory

Visiting Undergraduate Researcher

June 2022 – Present

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
- Designed lo-fi mockups in Figma as the sole Designer on a four-person team dedicated to building a mobile application to connect blind and low-vision users with the assistance they need for exploring unfamiliar locations
- Qualitatively analyzed transcripts, thematically coded user interviews, and refined A/B test methods to create new design principles for web applications and plug-ins integrating spatial interactions into its screen reader systems

UCF School of Politics, Security, and International Affairs

Undergraduate Research Assistant

January 2022 – Present

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
- Analyzed how armies retain their influence over governance after thwarting democratic transitions by using empirical evidence from Sudan's previous military takeovers to evaluate post-coup constitutional engineering
- Created 20 data visualizations utilizing Python, Datawrapper, and Inkscape that illustrated topics such as the coup epidemic in the Middle East, successful leadership turnover since 1950, and contemporary North African politics
- 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

Socio-Technical Interaction Research Lab

Undergraduate Research Assistant and Research Engineer

January 2021 – August 2022

Orlando, FL

- 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
- Conducted a literature review analyzing 73 peer-reviewed articles on computational approaches utilizing text or meta-data for online sexual risk detection, identifying three types of sexual risk detection present in the literature
- Created a web application using PHP and Python to serve as a dashboard for over 15 Undergraduate Researchers that provided features including flagging, text annotation, and bug-reporting for research projects across the lab
- 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

University of Washington Tacoma

Visiting Undergraduate Researcher

June 2021 – August 2021

Tacoma, WA

- 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 our 13-variable dataset to better understand how much variance was captured by every Principal Component being drawn along each axis
- Built out reports using GeoPandas to geographically model seven agglomerative clustering outputs and compare to 13 sets of demographic data using Pandas and NumPy aiming to find parallels with our qualitative analysis

WORK EXPERIENCE

ActBlue Technical Services

August 2022 – Present

Software Engineering Intern

Washington, D.C.

- Conducted an independent machine learning project that analyzed the impact of various donation patterns on election outcomes in across the United States in 2022, utilizing Python, Looker, and XGBoost, achieving high accuracy rates
- Worked with the Developer Experience team to analyze existing workflows within HubSpot and identified opportunities to automate processes using Python and the Hunter.io API, leading to a 75% reduction in manual data entry

Swing Left

August 2021 – May 2022

Analytics Intern

Washington, D.C.

- Ideated and launched a binary logistic regression model using Python and scikit-learn that internal Community and Marketing teams use to better their donation-focused marketing campaigns targeting 250k active voters a year
- Facilitated an internal qualitative study that examined 3,600 survey responses in order to produce actionable insights for upper management that tackles trends affecting 750k Swing Left volunteers over the past fiscal year

New America

August 2021 – May 2022

Digital Impact and Governance Initiative Intern

Washington, D.C.

- Analyzed the opportunities and challenges of the Lower Mekong Region's pursuit of digital transformation, covering factors such as geopolitical influences, the COVID-19 pandemic, digital connectivity, and regulatory governance
- Examined integrated data platforms to bring attention to how public technological infrastructure can transform the future of American digital governance, community development, and equity gaps with information portals

INVITED TALKS AND PRESENTATIONS

Reyna, Avery and Thatcher, Jim. "Cartographic Limits and Interdisciplinary Science: Maps and Mathematics in Pursuit of Social Justice." October 20, 2022. *North American Cartographic Information Society*.

Powell, Jonathan, and **Reyna, Avery**. "Legacies of Instability: Military Coups and Regime Consolidation in the Modern World." October 8, 2022. *International Studies Association*.

Reyna, Avery and Powell, Jonathan. "Forecasting the Future: Applied Machine Learning to Detect Risk of Illegal Leadership Turnover." July 22, 2022. *Summer Research Showcase*.

Reyna, Avery and Alsoubai, Ashwaq. "Comparative Analysis between TextRank and LexRank: Testing Utility of Text Summarization Models for Data Annotation." March 31, 2022. *Student Scholar Symposium*.

Razi, Afsaneh, and **Reyna, Avery**. "Adolescent Online Safety: Expanding the Knowledge Base and Developing Machine Learning Algorithms." March 2, 2021. *Showcase of Undergraduate Research Excellence*.

PUBLIC SCHOLARSHIP

Reyna, Avery. "Interdisciplinary Social Science and the Limits of Quantitative Research." October 25, 2022. *The Loop: The ECPR's Political Science Blog*.

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

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

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

Reyna, Avery. "Latin America's Vaccination Efforts: What to Know." May 20, 2021. *Council on Foreign Relations*.

AWARDS AND HONORS

Undergraduate Studies Scholarship <i>University of Central Florida</i>	2022
The Laassel Family Political Science Endowed Scholarship Fund <i>University of Central Florida</i>	2020
HACU Leader-in-Residence <i>Hispanic Association of Colleges and Universities</i>	2020
Student Government Association Scholarship <i>University of Central Florida</i>	2020
Excellence in Action Award <i>University of Central Florida</i>	2020
Burnett Honors Scholar <i>University of Central Florida</i>	2019
Athena Resident Scholarship <i>University of Central Florida</i>	2019
Florida Medallion Scholar <i>University of Central Florida</i>	2018

SKILLS

Languages: Python, JavaScript (React.js, D3.js), TypeScript, HTML/CSS, SQL (PostgreSQL, MySQL)

Methods: User Studies, Usability Tests, Field Studies, Surveys, Focus Groups, A/B Testing