Christopher J. Callaghan

Sacramento, CA

☐ +1 831 917 8527 | ✉ cjcallaghan88@gmail.com | 🏠 cllghn.me | cllghn | christopher-callaghan

Data scientist and software engineer with 8+ years of experience building cloud-native applications, data pipelines, and analytics tools, applying scalable tech and statistical methods to government and non-profit challenges.

Employment

Council of State Governments Justice Center
New York, New York

Data Science Program Director | 40hrs per week, Mon-Fri
Jan 2023 - Present

- Managed a cross-functional team of data scientists and engineers assigned to the Justice Counts initiative, delivering production-grade cloud-based applications to gather, validate, and visualize criminal justice data from 2,500+ agencies nationwide.
- Built React applications from custom RESTful APIs to visualize justice metrics, developed automated ETL pipelines to load data from vendors and perform quality assurance on data for 2,500+ criminal justice agencies using Python, SQLAlchemy, PostgreSQL, Docker, and GitHub Actions. This system reduced manual data processing, improved quality validation, and enabled researchers to analyze large datasets with ease.
- Founded and led the Resident Corrections Analyst program, hiring, training, and embedding data analysts within state corrections agencies to strengthen internal data practices. Enabled agencies to improve reporting capacity and operational decision-making using tools like R, Tableau, commercial platforms, and custom open-source solutions.

Naval Postgraduate School
Monterey, California

Deputy Director of Education Operations, CORE Lab | 40hrs per week, Mon-Fri
Aug 2021 - Jan 2023

- Supported federally funded research efforts for the Common Operational Research Environment, within the Defense Analysis Department, on projects focused on homeland security and defense through the lens of data science. To that end, I designed and conducted quasi-experimental open-source research on issues of great power competition, social systems, and information operations.
- Taught courses on data analysis and visualization methodologies (e.g., Chinese Strategic Social Networks, Dynamic Social Network Analysis, and Visual Analytics) for military (e.g., SOCOM, JTF North), law enforcement (e.g., San Jose, Houston, and Nashville police departments, and Federal Bureau of Investigation), and international defense and security partners (e.g., FFI (Norway), ESGE (Peru), ESPE (Ecuador)).

City of Seaside
Seaside, California

Administrative Analyst II | 40hrs per week, Mon-Fri
Dec 2020 - Aug 2021

- Managed the administrative and financial operations for a multiyear federal grant program aimed at supporting the U.S. Army Base Realignment and Closure Office at Fort Ord, U.S. Environmental Protection Agency, and California Department of Toxic Substances Control in the monitoring of land use controls and redevelopment of lands previously owned by the U.S. Army.
- Monitored compliance with regulatory mechanisms through coordination with landowners (e.g., County of Monterey; Cities of Seaside, Del Rey Oaks, and Monterey; and local colleges), data gathering and analysis on program metrics, and communication with Federal and State regulators.

Naval Postgraduate School
Monterey, California

Faculty Associate for Research | 40hrs per week, Mon-Fri
Mar 2017 - Dec 2020

- Led data wrangling and analysis of multi-terabyte datasets—including global vessel traffic and social media text—for the Department of Defense–sponsored research. Applied statistical modeling and natural language processing techniques to extract insights, with results published in peer-reviewed journals and technical reports for defense stakeholders.
- Engineered full-stack software solutions for law enforcement organizations (e.g., San Jose Police Department, Sacramento County Sheriff) to leverage data from their persistent databases and inform intelligence analysts on social networks of interest. This included developing ETL pipelines; building RESTful APIs for transfer; and, leveraging statistical and visualization techniques to deliver insightful front-end experiences.

Middlebury Institute of International Studies
Monterey, California

Research Coordinator | 32hrs per week, Mon-Fri
Jan 2015 - Jan 2017

- Led a data analysis and program evaluation lab composed primarily of graduate students and faculty members providing government, non-profit, and social change organizations with programmatic support and analytics.
- Worked closely with each program team to prioritize, plan, and execute requirements on time. This included aiding staff with data acquisition and analysis, tracking progress across each stage of the project, and ensuring the work done was compliant with industry and internal review board standards for social science research.

Consulting

Sam Houston State University - Institute for Homeland Security
Huntsville, Texas

Full Stack Engineer
Jan 2025 - Present

- Built and maintain the Texas Water Networks Explorer (TWNet), a public tool for visualizing water distribution networks across Texas using data from the TWDB Water Use Survey. Designed with a Python backend and React/Next.js frontend, hosted on Vercel, TWNet applies network analysis and interactive visualizations to help policymakers identify key stakeholders, understand water flows, and improve management strategies.

Sam Houston State University - Institute for Homeland Security   *Huntsville, Texas*
Educational Consultant   *Dec 2022 - Aug 2023*
- Designed and developed a five-day training on social network analysis for homeland security practitioners.

Community Alliance for Safety and Peace   *Salinas, California*
Data Analyst   *Jan 2016 - May 2016*
- Developed a KPI interactive dashboard for a network of 64 partners (public, private and non-profit sectors) dedicated to reducing violence and building a better future for the children of Monterey County.

Education

Middlebury Institute of International Studies   *Monterey, California*
Master of Public Administration   *2016*

University of California, Santa Cruz   *Santa Cruz, California*
Bachelor of Science, Biology   *2012*

Software Engineering and Data Science Skills

</> **Programming Languages:** R (Advanced) | Python (Advanced) | SQL (Intermediate) | JavaScript (Intermediate)

⚙ **Application Development:** Frameworks (Django, Flask, Express.js, NEXT.js) | Front-end (React, Bootstrap, TailwindCSS, Shiny, Quarto) | Back-end (Flask, FastApi, Plumber) | Databases (MySQL, PostgreSQL, AWS RDS) | Web Servers (Apache HTTP Server, AWS EC2) | Containerisation (Docker) | Hosting (Netlify, Heroku, AWS EC2) | CI/CD (Travis CI, GitHub Actions) | Source control (Git, Github) | Testing (Jest)

💬 **Digital Communication:** Data analysis reporting (RMarkdown, Quarto, Jupyter, Marimo) | Data visualization (ggplot2, altair, highcharts.js, plotly) | Presentation (Xaringan, deck.js)

🏔 **Data Analysis:** Exploratory data analysis (tidyverse, pandas, SQLAlchemy, SQL) | GIS (sf, geopandas, QGIS) | Machine learning (scikit-learn, pyTorch) | Natural Language Processing (spacy) | Network analysis (igraph, NetworkX)

Public Lectures and Conference Presentations

- *Understanding Dark Networks*, Combating Terrorism Technical Support Office Counter Tunnel Working Group Workshop, San Diego, California, September 2019.
- *Analytic Methods for Strategic Risk Assessment, Leveraging Big Data and Social Media*, Institute of Strategic Studies - Naval Postgraduate School Academic Workshop, Ulaanbaatar, November 2018.
- *Geospatial and Social Network Causes of Group Violence*, 1st North American Social Networks Conference (NASNC), Washington, D.C., August 2018.

Publications

Contreras, O., Jones, N., Weisz Argomedo, D., Sullivan, J., Callaghan, C.   *Journal of Computational Social Science*

Revealing Hidden Ties in Organized Crime Networks: A Comparative Study of Node Similarity, Graph Embeddings, and Graph Neural Networks.   *2025*

Contreras, O., Jones, N., Weisz Argomedo, D., Sullivan, J., Callaghan, C.   *Baker Insitute for Public Policy*

The Use of Similarity-based Algorithms to Predict Links in Mexican Criminal Networks   *2023*

Callaghan, C., Schroeder, R., and Porter, N. W.   *Center for International Maritime Security*

Mapping Gray Maritime Networks for Hybrid Warfare   *2020*

Porter, N. W., Schroeder, R., Callaghan, C., Barreto, A., Bussell, S., Young, B., Loewer, M., Funk, D., von Eiff, J.   *Connections*

Mapping Gray Maritime Networks   *2019*

Honors and Awards

2019   Winner 2019 Annual Defence Innovation Challenge   *NATO NCI Agency*