Ainslee Archibald

📞 redacted   ✉ first last at google's mail service   🔗 ainsarch.com   /ains-arch   in /ainslee-archibald

Objective

Early-career developer with a background in data science, IT systems, and Linux environments. Interested in roles where I can take ownership of complex technical problems, dive deep into system-level challenges, and find my place on a strong engineering team. Flexible across the stack, from firmware and systems development to data engineering and applied ML.

Work Experience

Research Assistant | Los Angeles City Council Reform Project   Jan 2025 – Aug 2025
Claremont McKenna College   *Claremont, CA*
- Built Python/Bash data pipelines for computationally intensive random walk analysis on HPC clusters using SLURM; analyzed redistricting scenarios for LA City Council.
- Consolidated fragmented Python/R codebases into maintainable workflows; standardized Git repository structure and served as point person for version control.
- Poster presentation at UCI's Southern California Applied Math Conference (April 2025).
- Attended Women in Data Science's Zürich Conference (May 2025).
- Attended MGGG's Voting Methods Modeling Workshop (June 2025).

Tutor/Peer Mentor/Teaching Assistant/Grader   Jan 2023 – May 2025
Pitzer & Pomona Colleges | Offices of Student Affairs   *Claremont, CA*
- *Fall 2023 & Spring 2024 Calculus III Grader*: responsible for grading homework.
- *Springs 2023-25 Intro Computer Science in Python Tutor*: walk-in tutoring sessions several times a week.
- *Spring 2024 & 2025 Machine Learning Tutor*: responsible for holding weekly online tutoring sessions.
- *Fall 2023 Intro Environmental Geology Teaching Assistant*: responsible for both walk-in tutoring sessions and grading.
- *Spring 2023 Linear Algebra Tutor*: responsible for one-on-one tutoring with a single student.

Help Desk Assistant   Oct 2022 – Dec 2024
Pitzer College Office of Information Technology   *Claremont, CA*
- Provided front-line technical support for students and faculty; resolved hardware, software, and network issues.
- Troubleshoot Wi-Fi connectivity and printer issues; installed software and supported general user tech problems.
- Processed laptop returns by performing hard drive removals/replacements to ensure data security across Mac and Windows systems.
- Deployed and imaged Windows 10 computers; handled asset tagging and physical installation in labs and offices.

Undergraduate Researcher   May 2024 – Aug 2024
University of Colorado, Colorado Springs | Research Experience for Undergraduates   *Colorado Springs, CO*
- Developed adversarial defense mechanisms for transformer-based LLMs using perplexity-based detection and mask-and-refill techniques; validated on SST-2 and AG News datasets.
- Lead author on colloqium research paper *Exploring Perplexity Defense on Adversarial Language Model Inputs*, analyzing vulnerabilities and recommending countermeasures for adversarial robustness.
- Underwent training and education on the history and theoretical development of AI/ML with a focus on the transformer architecture and language models.

Certifications

CompTIA A+	May 2025
CompTIA Sec+	In progress

Education

Bachelor of Arts in Data Science | Minor in Mathematics   Aug 2021 – May 2025
Pitzer College, GPA 3.87   *Claremont, CA*
- Coursework completed primarily at Claremont McKenna through the Claremont Colleges consortium.
- Studied data structures, algorithms, databases, and statistical modeling; trained in SQL, Big Data tools, and communicating data insights across technical and non-technical teams.
- Coursework in statistical inference, Bayesian analysis, machine learning, reinforcement learning, and graph algorithms, with additional training in data ethics, modeling, and computational tools for large-scale data analysis.
- Interdisciplinary training in computer science, statistics, and data science, with advanced coursework in machine learning, modeling, big data systems, and algorithm design.

Technical Coursework

- **Intro to Computer Science** (Spring 2022) – Python, Jupyter Notebooks, basic Python libraries, computer science fundamentals
- **Intro to Mapping** (Spring 2022) – ArcGIS Pro, data communication, geospatial data science fundamentals
- **Foundations of Data Science** (Fall 2022) – R, SQL, regular expressions, RStudio, Tidyverse, data science & machine learning
- **GIS for Data Science** (Fall 2022) – ArcGIS Pro/Notebooks, Python. Graduate level. Built a data processing pipeline.
- **Data Structures & Algorithms** (Spring 2023) – Python, Git, TDD, Linux shell scripting. Used MapReduce for social media analysis.
- **Machine Learning** (Spring 2023) – Python (PyTorch and Keras), neural network theory
- **Big Data** (Spring 2024) – SQL (PostgreSQL/SQLite3), database design, Docker. Built a Flask web app with Nginx/Gunicorn.
- **Programming with UNIX** (Summer 2024) - Informal audit. Recompiled the Linux kernel to experiment with performance.
- **Languages for Computing** (Fall 2024) - LLMs, Groq and OpenAI APIs. Implemented RAG in Python, wrote a simple esolang.
- **Data & Justice Past and Future** (Fall 2024) - JavaScript, HTML. Built a browser extension for Firefox.
- **Bayesian Statistics** (Fall 2024) - R. Developed a full hierarchical model using an existing dataset.
- **Math of Political Districting** (Fall 2024) - Python, MGGG Gerrychain. Built a random walk pipeline for Colorado and Nevada data.
- **Graph Algorithms** (Spring 2025) - Python. Final project on Hyperlink-Induced Topic Search.
- **Reinforcement Learning** (Spring 2025) - Python, Gymnasium. Trained an RL agent to correct a scrambled 5-letter target.

Languages

- **Python** (3+ years, advanced): PyTorch, Keras, GeoPandas, Pandas, NumPy, VoteKit, GerryChain
- **Bash/Shell** (2+ years, intermediate): scripting, automation, CLI workflows
- **SQL** (3+ years, intermediate): PostgreSQL, MySQL, SQLite
- **R** (2+ years, intermediate): Tidyverse, statistical modeling
- **C/C++** (learning) keyboard firmware, studying fundamentals

Skills

- **ML/Data:** PyTorch, Keras, Pandas, NumPy, GeoPandas, scikit-learn, GerryChain, VoteKit, Tidyverse
- **Web:** Flask, Nginx, Gunicorn
- **Operating Systems:** Linux (server administration, shell scripting), Windows (deployment, imaging), macOS
- **Scripting & Automation:** Python, Bash, SLURM job scheduling
- **Infrastructure:** Docker, HPC clusters, remote server management, RDP
- **Networking:** TCP/IP fundamentals, Wi-Fi troubleshooting, basic routing/switching concepts
- **Databases:** PostgreSQL, MySQL, SQLite - basic administration and querying
- **Support:** Hardware troubleshooting, software installation, user account management
- **Tools:** Git, Vim/Neovim, SSH, Active Directory (basic), Jupyter, LaTeX, ArcGIS, Pylint, pyenv, venv, RStudio, R Markdown
- **Political Tech:** Impactive, Votebuilder, VAN Dialer, OpenVPB, Mobilize

Projects

Personal Projects   Present
- Experimenting with PCB soldering for custom electronics with basic circuit design.
- Configuration and optimization of Linux workstations on multiple personal computers, using tools like Neovim for development, fine-tuning system-level scripts, and managing dependencies for a custom Linux workflow.
- Writing and maintaining firmware for custom mechanical keyboard build.

West Valley Water District Data Science Capstone   Spring 2025
- Led the coding aspects of a GIS data analysis project for the West Valley Water District as part of the capstone for the Data Science degree.
- Led coding aspects of a data science project applying GIS + predictive modeling.
- Analyzed geospatial data using ArcGIS Pro, bringing together multiple datasets and bridging classification and predictive modeling tasks to support client needs.

Lambda Server Administrator | **Independent Study**   Academic Year 2024 – 2025
- Managed multi-user Linux server supporting 50+ CS students; developed Python and Bash automation scripts for user provisioning and resource allocation.
- Provided technical support and troubleshooting for system access and configuration issues.

Clubs & Volunteering

Data Assistant | The Student Life   Spring 2024
  - Worked with the news team to support reporting by collecting, cleaning, analyzing, and visualizing data in R.
  - Pitched and directed data-driven stories on topics of interest.

Data Scientist | P-ai P-ollution   Spring 2024
  - Drew from publicly available data to quantify the damages caused by air pollutants in Ontario, CA.
  - Project included data wrangling, exploratory data analysis, a time series, and a data visualization dashboard.

Fellow | Effective Altruism Introductory Fellowship   Spring 2024
  - Engaged in weekly discussions on ideas and strategies to improve the world through evidence and reason.
  - Involvement included speaker events, 1-on-1 mentorship, and career workshops in a dedicated community.

Head of Website | The Outback Newsprint Magazine   Academic Year 2023 – 2024
  - Responsible for website design and maintenance for theoutback.news.
  - Contributed news writing about student entrepreneurship and campus life.