

# Mitchell Kolb

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## Education

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### Bachelor of Science, Computer Science

Washington State University

## Professional Experience

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Software Developer

Pullman, WA

Psychology Department, WSU

Oct 2023 - 2024

- Developed the GSUR Data Automation Tool (Python, Requests, BeautifulSoup) that downloads and analyzes **2,000+** patient health files, cutting a multi-day data manual process to **under 8 minutes**
- Presented the automation tool to **80+** attendees at the 2024 WSU Psychology Symposium, prompting departmental adoption and **enabling a PhD student to defend her dissertation**
- Overhauled the EMMA Dashboard by migrating it to updated lab infrastructure and **optimizing legacy code**, boosting platform compatibility, performance, and integration with new health datasets
- Collaborated with researchers through weekly sprints to refine features and testing, so that the output aligned with the study goals and **resolving 100%** of reported bugs before production

## Projects

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### [Living Atlas](#)

- Led a team of 7 to develop a scalable full-stack web app, integrating environmental data across the Pacific Northwest, enhancing accessibility, and saving researchers hours of manual data aggregation
- Engineered a RESTful backend with FastAPI and PostgreSQL, optimizing database queries to improve data retrieval speed and enabling real-time analysis for 350+ academic and industry users
- Implemented Docker-based CI/CD pipelines and GitHub workflows to streamline feature integration and ensure continuous testing, reducing deployment errors by a measured 30%

### [Linux EXT2 Filesystem](#)

- Developed a Linux-compatible EXT2 file system in C, replicating critical structures like Superblocks, Bitmaps, and Inode Tables to closely mirror Linux file operations
- Implemented 10+ file system commands, including cd, mkdir, and read/write, enhancing functionality and achieving 95% parity with Linux standards for seamless file system interaction
- Designed and integrated a cache-list with a hit-ratio metric to optimize file system performance, reducing disk I/O by caching frequently accessed blocks and inodes efficiently.

### [Airline Search Engine](#)

- Engineered a high-performance search engine leveraging Neo4j, PySpark, and Python to process 67,000+ routes across 7,600+ airports, enabling real-time queries and optimal travel routes
- Implemented a graph-based data model and MapReduce operations to streamline route discovery, decreasing query response times by an estimated 50% compared to traditional relational databases
- Strengthened system scalability by integrating distributed computing and horizontal scaling strategies, allowing seamless handling of future datasets and increased query loads

## Skills

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**Languages & Frameworks:** Python, SQL, C, C++, HTML, FastAPI, PyQt6, Tkinter, Flask, Pytest, Unittest, GTK

**Tools & Platforms:** Docker, Git, PostgreSQL, CI/CD, SwaggerUI, Jupyter Notebook, Google Cloud Services, GitHub Actions

**Libraries:** BeautifulSoup, Requests, Selenium, Playwright, WRS, Pandas, NumPy, Matplotlib, PyTorch