Willem Mirkovich

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Education

- **University of Colorado Boulder, Engineering and Applied Science** — Boulder, CO
  Bachelor of Science - Computer Science; GPA: 3.9 — 2018 - May 2020
  Courses: Algorithms, Artificial Intelligence, Machine Learning, Data Science, Big Data, Operating Systems
- **University of Washington Seattle, Pre-Engineering** — Seattle, WA
  Pre-Engineering - Computer Science; GPA: 3.7 — 2016 - June 2018
  Courses: Data Structures, Databases, Applied Linear Algebra, Differential Equations

Professional Work Experience

- **Senior Software Engineer** — Full-time
  Moody's (*Acquired Cape Analytics*), Remote/NYC — May 2025 - Current
  - **Rearchitect Core Inference Service**: Redesigned core inference service to handle model inference asynchronously, reducing global latency by 30%
  - **Production Rollout of New Computer Vision Model**: Handled full integration of novel Computer Vision PyTorch model taking in variable number of images, including full infrastructure handling
  - **Developed Model Context Protocol Servers**: Created experimental MCP Servers, allowing for LLM integration with internal APIs
- **Senior Software Engineer** — Full-time
  Cape Analytics, Remote — Feb 2023 - May 2025
  - **Technical Lead**: Technical Lead of multiple projects, including onboarding of core orthogonal imagery providers, enabling 98% coverage of nationwide households on inference platform
  - **Delivered Crucial Regulation Data**: Developed reproducible and fast pipeline required to provide imagery coverage estimates across entire states for approval of our software in regulation discussions. Requests were extremely time-sensitive (next day), and vital to continuing use of our product from regulatory perspective
  - **Fixed Critical Memory Leaks**: Investigated memory leaks causing global latency increases from core microservices. Fixes decreased model inference runtime, and lowered cloud costs eating up memory
- **Software Engineer II** — Full-time
  Cape Analytics, Remote — Feb 2022 - Feb 2023
  - **Geospatial Imagery Analysis**: Integrated and evaluated many geospatial imagery providers into Cape's inference infrastructure
  - **Machine Learning Model Integration**: Coordinated with Machine Learning Engineers to bring inference models into production, optimizing for latency, reproducibility and modularity
  - **Rewrote Core Service**: Rewrote core image rendering service that was failing and outdated. Added unit/integration tests, while also upgrading packages utilized and increasing robustness
- **Professional Research Assistant** — Part-time
  University of Colorado Boulder, Aerospace Engineering — Jul 2020 - Jul 2023
  - **Neural Network Development**: Developed Spatiotemporal prediction models using Neural Networks
  - **AMGeO Python API**: Designed and developed API for generating and loading assimilative maps of geospace data
  - **Microservice Architecture**: Created new microservice for data retrieval from AMPERE, along with logging tools for quick error debugging and anonymous user data retrieval
  - **Docker/Python 3 upgrade**: Updated core web services to utilize docker containers, as well as upgraded code base from Python 2 to 3
- **Full Stack Software Engineer I/II/III** — Full-time
  Anark Corporation, Boulder CO — Jun 2020 - Jan 2022
  - **Built API**: Built API for front-end visualization tools accessing/viewing 3D data and models
  - **Docker Microservices**: Built microservices within Docker containers
  - **Updated Legacy Code**: Modernized TypeScript code base to be built within NPM project instead of in Visual Studio

Projects

- **AMGeO**: AMGeO is a data science software project funded by the NSF EarthCube program aiming to open up the vast amount of geospace data to a broader audience. I have been a maintainer of the core AMGeO client tool that generates assimilative maps in conjunction with their web applications/services that package 3rd party data. AMGeO website: https://amgeo.colorado.edu/
- **Senior Thesis**: Completed a Senior Thesis Capstone. Research focused on work in pruning the search space of repeated iterations concerning slight variations of the same problem to reduce computation time. Applications in Linear Programming, String Search and Shortest-Path Algorithms.

Skills Summary

- **Languages**: Python, TypeScript, BASH, LaTeX, SQL, Java
- **Frameworks/Packages**: Scikit, PyTorch, FastAPI, Numpy, TensorFlow, Webpack, NodeJS, Express, Jest, JWTs
- **Databases**: Postgresql, PostGIS, MongoDB, Google Big Query
- **Tools**: Docker, GIT, JupyterLab, Neovim, AWS, GCP, QGIS, Visual Studio Code