John Edmiston

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Summary

Experienced in writing software to solve practical problems of the physical world. Able to work across team boundaries to ship products.

Experience

10/2022– present | **Senior Scientific Software Engineer**, *Cognitive Space*, Houston, TX (remote)

- Built multiple OR-Tools models for the planning/scheduling of satellite missions involving image collection and ground pass planning, often formulated as a network flow problem. The planning model was used to task an orbiting satellite via a web application.
- Interpreted high level requirements into technical architecture and implementation details; conceived and delivered full-stack features based on direct customer conversations, such as a mission plan differencing feature, in addition to a suite of planning algorithms.
- Conceived and developed rolling horizon CP-SAT mission planner for a missile tracking algorithm prototype, built simulated environment featuring synthetic imagery using VTK to demonstrate a live tip and cue system design.
- Conceived and developed a deep reinforment learning model approach to scheduling problems for missile tracking (Stable-Baselines3)
- Code was written to enable examination of multiple model variants using template metaprogramming and object oriented structure, in order to maximize reuse.

12/2021– 9/2022 | **Staff Data Scientist**, *Iterative Scopes*, San Francisco, CA

- Trained and deployed CNN to classify 2 types of video procedures from clinical trial recruitment pipeline, enabling 2/3 fewer manual interventions with 2% funnel loss using PyTorch, Docker, AWS Lambda, AWS Batch.
- MLOps contributions including unit and integration testing, CI/CD via Jenkins, Github actions, Terraform, smoothing deployment processes into multiple products, and enabling model evaluation at scale.

6/2021– 12/2021 | **Staff Data Scientist**, *Store No 8 (Walmart)*, San Francisco, CA

- Built prototypes for several data products, including a nutrition product to score health of food choices based on shopping basket and USDA guidelines.
- Rolled up my sleeves to recategorize internal products myself, by hand, to make for a better data model.

6/2019– **Senior Data Scientist**, *MycoWorks*, Emeryville, CA
05/2021 Established foundations for data systems architecture and led development of workflow application, including UI/UX design, distributed cloud computing, hardware in the loop, and system integration.

- Designed and developed full stack architecture and MVP from scratch, then managed team of in-house and external developers to improve the custom MES system. The system enabled clean data streams following raw materials to finished product inventory, resulting in 30% increase in worker time productivity and 225% increase in production capacity.
- Built extension of above system to control PLC based devices in automated factory, developed general code solution to flexibly connect multiple types of hardware with centralized system (cameras, sensors) using GCP Pub/Sub, Ignition.
- Developed suite of data democratization tools via Google sheets data feeds, Plotly dashboards, automatic reports, and ability to investigate individual production histories via single click Google slides preparation, increasing data visibility throughout the company and enabling new R&D questions to be investigated.

1/2019– **Senior Data Scientist**, *Proteus Digital Health*, Redwood City, CA
6/2019
- Integrated data feeds of patient lab records from unique format health care systems into a common schema, to improve the efficiency of manual processes to identify candidate patients.

1/2018– **Data Scientist**, *Hinge Health*, San Francisco, CA
1/2019
- Built multiple data products while absorbing body blows from rapidly changing backend sources to prepare member engagement reports, analyze inbound customer claims data to report ROI, monitor product team's A/B experiments, enabling sales revenue growth, maintaining customer relationships, while being the only member of the data team, starting from a headcount of 20 up until 80.

10/2015– **Structural Analyst**, *Lawrence Livermore National Laboratory*, Livermore, CA
1/2018 Pre and post processing for high accuracy FEM simulations.

- Built and analyzed numerical models for high fidelity simulation of hypervelocity impacts and energetic materials.
- Wrote Python scripts via CUBIT to enabled flexible meshing of complex CAD based components and structures for high velocity impact simulation.
- Managed HPC simulations on Linux clusters using custom job management and monitoring via Python/Bash scripts; Populated parameter space to understand sensitivity of structures to damage.

7/2013– **Postdoctoral fellow**, *Lawrence Berkeley National Lab*, Berkeley, CA
10/2015 R&D on methods for coupling porous flow and geomechanics, used a variety of numerical PDE solution methods (finite element, finite volume, peridynamics).

- Translated academic publications into code for hydraulic fracturing using novel combination of methods, developed from scratch.
- Developed in C++, C, and Python, with parallelism via MPI/OpenMP.

Computer skills

Languages	Python, C++, C, R, Javascript/HTML/CSS
Packages	OR-Tools, Docker, Pandas, NumPy, SciPy, MPI, OpenMP, Scikit-learn, SQLAlchemy, Celery, Terraform, CloudFormation, Flask, Django
Cloud	GCP, AWS, Cloud/Lambda functions, Batch, Pub/Sub, Heroku, CI/CD (Github Actions, Jenkins)
Misc.	Parallel computing, modeling physical systems and material properties, partial differential equations, computational geometry and tricks with unit vectors

Numerical methods

- Meshless methods and simulation: Peridynamics, SPH, MLSPH, EFG
- Finite Element Method, Finite Fourier Transforms, Finite Volume Method, Spectral Analysis
- Optimization, parameter fitting, uncertainty analysis

Doctoral thesis

Title	*Recent Advances in Continuum Plasticity: Phenomenological Modeling and Experimentation Using X-ray Diffraction*

Education

PhD, *University of California, Berkeley, Mechanical Engineering*

MS, *University of Wisconsin, Madison, Mechanical Engineering*

BS, *University of Minnesota, Minneapolis, Mechanical Engineering*