Aleksei Sholokhov

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EDUCATION

University of Washington **Seattle, WA**
Ph.D. in Applied Mathematics *Expected Graduation: 06/2023*

SKILLS

Machine Learning Engineering and Infrastructure **Boston, MA**
Stripe, Inc. Machine Learning Engineer Intern. *03/2022-06/2022*

- Designed and implemented a calibration pipeline for large deep learning and `xgboost` models using `flyte` and `airflow` frameworks. Improved the target metrics by 300%. Enabled the team offer their products to a much broader audience.
- Transformed my team's vision into a project proposal. Communicated extensively with my division's leadership to ensure the product meeting the company's needs. Presented 3 times at department-wide meetings. Drove the project to production in 3 months.

Research in Machine Learning Algorithms, Deep Learning, and Optimization **Boston, MA**
Mitsubishi Electric Research Labs, Inc., Machine Learning Research Intern *03/2022-06/2022*

- Created a new deep learning algorithm for predicting behavior of physical phenomena. Implemented it using `pytorch` and `tensorflow`. Successfully met specifications of an embedded device; improved the target metrics by 250%.
- Drove 1 paper from proposal to completion in 3 months and contributed, as a second author, to 1 additional paper.

Data Science and Statistical Analysis **Seattle, WA**
Institute for Health Metrics and Evaluation, Research Assistant *09/2019-12/2021*

- Invented new statistical modeling tool `pysr3` which does feature selection using non-convex optimization techniques. Implemented it as a `scikit-learn`-compatible `python` package. Achieved 30-fold speed-up relative to the competitors.
- Developed a statistical model that projects cases and deaths from COVID-19 in collaboration with a team of 130 researchers. It helped governmental decision makers manage resources and plan ahead during the pandemic.

Software Development in Python, MATLAB, and C++ **Seattle, WA**
University of Washington, Research Assistant *09/2018-now*

- Developed `gspack`: python-autograder to accelerate grading of coding assignments. This package is successfully used for 5 scientific computing classes for thousands of homeworks in Department of Applied Mathematics.
- Enabled SVM classifiers to work with large-scale data using approximate nearest neighbor search. Implemented it using `SQL`, `C++`, and `Python`. Improved accuracy and memory costs by 30% over competitors.
- Learned `OpenMP`, `MPI`, `CUDA`, and `MATLAB` by working as a teaching assistant for graduate-level High-Performance Computing and Scientific Computing classes for 6 quarters.

Negotiation Skills, Cross-Functional Collaboration, and Cross-Cultural Dialog **Seattle, WA**
As a Diversity, Equity, and Inclusion (DEI) Committee Member at UW *09/2020 - Now*

- Developed 10-year Diversity Action Plan for the Department of Applied Mathematics.
- Negotiated $20k financial commitment from the department of Applied Mathematics to Early Scholars Program.
- Organized and led climate orientations and educational seminars on importance of diversity and inclusion in academia.

SELECTED PUBLICATIONS

- Sholokhov A., Santomauro D., Burke J., Zheng P., and Aravkin A., "A Relaxation Approach to Feature Selection for Linear Mixed Effects Models", *arXiv:2205.06925, Under review in JCGS.*
- Sholokhov, A., Zheng, P., and Aravkin, A., "pysr3: Python Library for Sparse Relaxed Regularized Regression", *Presented at ICCOPT 22*
- IHME Covid-19 Forecasting Team, "Modeling COVID-19 scenarios for the United States". *Nature Medicine*
- Belyy A.V., Selezniova, M.S., Sholokhov, A., and Vorontsov, K., "Quality Evaluation and Improvement for Hierarchical Topic Modelling", *24rd International Conference on Computational Linguistics*