

SAMUEL STANTON

<https://samuelstanton.github.io>

ss13641@nyu.edu

My research focuses on probabilistic machine learning methods for online decision-making, such as active learning, black-box optimization, and adaptive control. Application areas include ad tech, finance, robotics, and biomedical research.

EDUCATION

Ph.D. in Data Science, New York University

Expected 2022

Proposed Thesis: *Probabilistic Machine Learning for Online Decision-Making*.

Master of Science in Operations Research, Cornell University

August 2019

Stability, Optimism, and Curiosity in Model-Based Reinforcement Learning.

Bachelor of Science in Mathematics, University of Colorado Denver

May 2017

Thesis: *An Algorithm for Redistributing Disproportionate Numbers of Political Asylum Applicants*.

Graduated *summa cum laude*.

SKILLS

Focus Areas

- **Machine learning, deep learning, data science, optimization, control, algorithms**

Languages, Libraries, and Platforms

- **Python, SQL, Matlab; PyTorch, Ray; AWS Cloud Computing**

PROFESSIONAL EXPERIENCE

Applied Science Intern

Summer 2020 – Summer 2021

Amazon Web Services

Summer 2021: investigated adversarial training for robust reinforcement learning as part of the AWS AI Lablet directed by Dr. Alex Smola. Proposed modifications to standard RL algorithms were evaluated at scale using EC2 cloud compute resources.

Summer 2020: investigated resource-efficient algorithms for neural architecture search as part of a long-term research program to improve the capabilities and accessibility of the Amazon AutoML product Sagemaker. Implemented prototype in Python and drafted a tech report and tutorial on the topic.

Machine Learning Research Intern

Summer 2019

Secondmind (formerly Prowler.io)

Investigated the feasibility of developing reinforcement learning agents for finance and logistics. Independently defined an agenda to combine recent deep reinforcement learning algorithms with probabilistic transition models. Implemented prototype in Python and presented initial results.

Data Science Intern

Summer 2017

United States National Security Agency

Explored data regarding analyst work-flow to improve assessment and training procedures for internal operations. Wrote internal API wrappers and scripts to aggregate, clean, and visualize tool usage data. Presented initial findings, delivered an analyst assessment dashboard for managers. Held a Top Secret security clearance.

PUBLICATIONS AND PREPRINTS

- [1] Stanton, S., Izmailov, P., Kirichenko, P., & Wilson, A. G. (2021). Does Knowledge Distillation Really Work? In *Advances in Neural Information Process Systems 35* (NeurIPS).
- [2] Maddox, W., Stanton, S., & Wilson, A. G. (2021). Conditioning Sparse Variational Gaussian Processes for Online Decision-Making. In *Advances in Neural Information Process Systems 35* (NeurIPS).

- [3] Stanton, S., Maddox, W., Delbridge, I., & Wilson, A. G. (2021). Kernel Interpolation for Scalable Online Gaussian Processes. In *Proceedings of the 24th International Conference on Artificial Intelligence and Statistics* (AISTATS).
- [4] Amos, B., Stanton, S., Yarats, D., & Wilson, A. G. (2021). On the model-based stochastic value gradient for continuous reinforcement learning. *Learning for Dynamics and Control*.
- [5] Gruver, N., Stanton, S., Kirichenko, P., Finzi, M., Maffetone, P., Meyers, V., Delaney, E., Greenside, P., Wilson, A.G. (2021). Effective Surrogate Models for Protein Design with Bayesian Optimization. *The 2021 ICML Workshop on Computational Biology*.
- [6] Finzi, M., Stanton, S., Izmailov, P., & Wilson, A. G. (2020). Generalizing Convolutional Networks for Equivariance to Lie Groups on Arbitrary Continuous Data. In *Proceedings of the International Conference on Machine Vision and Machine Learning* (ICML).
- [7] Stanton, S., Wang, K. A., & Wilson, A. G. Model-based Policy Gradients with Entropy Exploration through Sampling (2019). *Generative Modeling & Model-Based Reasoning for Robotics & AI Workshop* (ICML).
- [8] Stanton, S. (2017). Beyond the Dublin Regulation: Distributing Political Asylum Applicants Dynamically. Undergraduate Thesis, University of Colorado Denver.

OTHER RESEARCH EXPERIENCE

Undergraduate Research Assistant

Summer 2016

University of California Los Angeles

Designed and executed experiments in a fluid dynamics lab to investigate the behavior of viscous particle slurries. Wrote image analysis code in Matlab to collect and process experimental data.

Undergraduate Research Assistant

2016

University of Colorado Denver

Research in algorithms with desirable scalability and stability properties for indefinite symmetric matrix decomposition in Matlab. Supervised by Dr. Julien Langou.

AWARDS

2021 NeurIPS Outstanding Reviewer

December 2021

Awarded to reviewers judged to be instrumental to the peer review process.

2018 United States Department of Defense NDSEG Fellowship

April 2018

Awarded in recognition of academic excellence and achievement in STEM. Proposed research exploring Bayesian optimization for automatic machine learning.

2017 COMAP Mathematical Contest in Modeling, Finalist

April 2017

Awarded for a model of the impact of autonomous vehicles on Seattle traffic congestion.

REFERENCES

Dr. Andrew Wilson (Advisor), Assistant Professor
Courant Institute of Mathematical Sciences, New York University
andrewgw@cims.nyu.edu

Dr. Cedric Archambeau, Principal Applied Scientist
Amazon Web Services
cedrica@amazon.com

Dr. Mark van der Wilk, Assistant Professor
Department of Computing, Imperial College London
m.vdwilk@imperial.ac.uk