Samuel Stanton

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Research Interests

I am interested in foundational machine learning research with applications that promote human flourishing, particularly the life sciences. I wish to understand and design self-directed intelligent systems that automatically collect and incorporate the necessary information to make difficult decisions in consequential online settings. Applications of my work include control algorithms for robotic systems, efficient data collection strategies for public health surveillance, and lab-in-the-loop experimental design for antibody engineering.

Professional Background

- **Prescient Design, Genentech Research and Early Development** — New York City, NY
  Senior Machine Learning Scientist — *June 2022 - Present*
- **Amazon Web Services** — Remote
  Applied Science Intern — *June 2020 - Aug. 2021*
- **Secondmind** — Cambridge, U.K.
  Machine Learning Research Intern — *June 2019 - Sept. 2019*
- **U.S. National Security Agency** — San Antonio, TX
  Data Science Intern — *May 2017 - Aug. 2017*

Academic Background

- **New York University** — New York City, NY
  Ph.D., Data Science, Thesis: Probabilistic Machine Learning for Online Decision-Making. — *Aug 2019 - Sept 2022*
- **Cornell University** — Ithaca, NY
  M.S., Operations Research — *Aug 2017 - May 2019*
- **University of Colorado Denver** — Denver, CO
  B.S. summa cum laude, Applied Mathematics — *Aug 2013 - May 2017*

Refereed Publications

1. Gruver, N., Stanton, S., Frey, N. C., Rudner, T. G., Hotzel, I., Lafrance-Vanasse, J., ... & Wilson, A. G. (2023, December). Protein Design with Guided Discrete Diffusion. *Advances in Neural Information Processing Systems*, tbd.
2. Stanton, S., Maddox, W., & Wilson, A. G. (2023, April). Bayesian Optimization with Conformal Prediction Sets. In *International Conference on Artificial Intelligence and Statistics* (pp. 959-986). PMLR.
3. Stanton, S., Maddox, W., Gruver, N., Maffettone, P., Delaney, E., Greenside, P., & Wilson, A. G. (2022, July). Accelerating Bayesian Optimization for Biological Sequence Design with Denoising Autoencoders. In *International Conference on Machine Learning* (pp. 20459-20478). PMLR.
4. Gruver, N., Finzi, M., Stanton, S., & Wilson, A. G. (2022, April). Deconstructing the Inductive Biases of Hamiltonian Neural Networks. In *International Conference on Learning Representations*.
5. Stanton, S., Izmailov, P., Kirichenko, P., Alemi, A. A., & Wilson, A. G. (2021, December). Does Knowledge Distillation Really Work? *Advances in Neural Information Processing Systems*, 34, 6906-6919.
6. Maddox, W. J., Stanton, S., & Wilson, A. G. (2021, December). Conditioning Sparse Variational Gaussian Processes for Online Decision-Making. *Advances in Neural Information Processing Systems*, 34, 6365-6379.
7. Amos, B., Stanton, S., Yarats, D., & Wilson, A. G. (2021, June). On the Model-Based Stochastic Value Gradient for Continuous Reinforcement Learning. In *Learning for Dynamics and Control* (pp. 6-20). PMLR.
8. Stanton, S., Maddox, W., Delbridge, I., & Wilson, A. G. (2021, April). Kernel Interpolation for Scalable Online Gaussian Processes. In *International Conference on Artificial Intelligence and Statistics* (pp. 3133-3141). PMLR.
9. Finzi, M., Stanton, S., Izmailov, P., & Wilson, A. G. (2020, July). Generalizing Convolutional Neural Networks for Equivariance to Lie Groups on Arbitrary Continuous Data. In *International Conference on Machine Learning* (pp. 3165-3176). PMLR.

Refereed Workshop Papers

1. Park, J. W., Stanton, S., Saremi, S., Watkins, A., Dwyer, H., Gligorijevic, V., ... & Cho, K. (2022, December). PropertyDAG: Multi-Objective Bayesian Optimization of Partially-Ordered, Mixed-Variable Properties for Biological Sequence Design. *NeurIPS AI for Science Workshop*.

2. Stanton, S., Fakoor, R., Mueller, J., Wilson, A. G., & Smola, A. (2021, December). Robust Reinforcement Learning for Shifting Dynamics During Deployment. *NeurIPS Workshop on Safe and Robust Control of Uncertain Systems*.

3. Stanton, S., Wang, K. A., & Wilson, A. G. (2019, July). Model-based Policy Gradients with Entropy Exploration through Sampling. *ICML Generative Modeling and Model-Based Reasoning for Robotics and AI Workshop*.

Awards

- NeurIPS Outstanding Reviewer 2021 - 2022
- National Defense Science and Engineering Graduate (NDSEG) Fellowship 2018 - 2021

References

- Dr. Andrew Gordon Wilson (Ph.D. advisor), Associate Professor, Courant Institute of Mathematical Sciences, NYU
- Dr. Cedric Archambeau, Director of AI, Helsing.ai
- Dr. Mark van der Wilk, Associate Professor, Department of Computer Science, University of Oxford