Aleksei G. Sorokin

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Education

2021 - 2025	**Ph.D. in Applied Mathematics.** Illinois Institute of Technology (IIT).
2017 - 2021	**Master of Data Science.** IIT. Summa cum laude.
2017 - 2021	**B.S. in Applied Mathematics, Minor in Computer Science.** IIT. Summa cum laude.

Experiences

Summer 2023	**Graduate Intern** at **Los Alamos National Laboratory.** I modeled the solution processes of PDEs with random coefficients using efficient and error aware Gaussian processes resulting in [2].
Summer 2022	**Givens Associate** at **Argonne National Laboratory**. I researched methods to efficiently estimate failure probability using Monte Carlo with non-parametric importance sampling resulting in [1].
Summer 2021	**Machine Learning Engineer** at **SigOpt, an Intel Company**. I developed novel meta-learning techniques for model-aware hyperparameter optimization resulting in [5].
2018 - Present	**Lead Developer** of **QMCPy: A Quasi-Monte Carlo Python Library.** This package provides researchers and practitioners with high quality sequence generators, automatic variable transformations, adaptive stopping criteria algorithms, and diverse use cases. See [3, 6] or visit *qmcpy.org*.
Fall 2021 - Present	**Teaching assistant** at **IIT**. Includes leading review sessions for Ph.D. qualifying exams.
Fall 2022	**Participant** in an elective course on **AI Driven Science on Supercomputers** through **Argonne National Laboratory**. Coursework at *github.com/alegresor/ai-science-training-series*.

Publications

[1] Aleksei G Sorokin and Vishwas Rao. "Adaptive Probabiliy of Failure Estimation with Gaussian Processes". In preparation for the SIAM/ASA Journal of Uncertainty Quantification.

[2] Aleksei G Sorokin et al. "Computationally Efficient and Error Aware Surrogate Construction for Numerical Solutions of Subsurface Flow Through Porus Media". In preparation for Advances in Water Resources Journal.

[3] Aleksei G. Sorokin and Rathinavel Jagadeeswaran. "Monte Carlo for Vector Functions of Integrals". In preparation for the 2022 Monte Carlo and Quasi-Monte Carlo Methods Conference Proceedings.

[4] Eda Gjergo et al. *GalCEM. I. An Open-source Detailed Isotopic Chemical Evolution Code*. Feb. 2023. DOI: 10.3847/1538-4365/aca7c7. URL: https://dx.doi.org/10.3847/1538-4365/aca7c7.

[5] Aleksei Sorokin et al. "SigOpt Mulch: An intelligent system for AutoML of gradient boosted trees". In: *Knowledge-Based Systems* (2023), p. 110604. ISSN: 0950-7051. DOI: https://doi.org/10.1016/j.knosys.2023.110604. URL: https://www.sciencedirect.com/science/article/pii/S0950705123003544.

[6] Sou-Cheng T. Choi et al. "Quasi-Monte Carlo Software". In: *Monte Carlo and Quasi-Monte Carlo Methods*. Ed. by Alexander Keller. Cham: Springer International Publishing, 2022, pp. 23–47. ISBN: 978-3-030-98319-2.

Awards

2023	**Outstanding Mathematics Poster**, Los Alamos National Laboratory.
2020	**Karl Menger Student Award for Exceptional Scholarship**, IIT.

References

hickernell@iit.edu	**Fred J. Hickernell, Ph.D.** Vice Provost for Research and Professor of Applied Mathematics, IIT.
nickh@lanl.gov	**Nicolas W. Hengartner, Ph.D.** Senior Scientist, Los Alamos National Laboratory.
mccourt@sigopt.com	**Michael J. McCourt, Ph.D.** Research Engineer, SigOpt, an Intel Company.
vhebbur@anl.gov	**Vishwas Rao, Ph.D.** Assistant Computational Mathematician, Argonne National Laboratory.
schoi32@iit.edu	**Sou-Cheng T. Choi, Ph.D.** Chief Data Scientist, Kamakura Corporation.