

Anton Sugolov

Toronto, ON anton.sugolov@mail.utoronto.ca
Canada sugolov.ca
github.com/sugolov

Education

HBSc. Applied Mathematics and Statistics	09.2020 – 06.2024
Victoria College at the University of Toronto, St. George	3.80
• Probability, Deep Learning, Probabilistic Modeling, Optimization, PDE	

Research Experience

LLMs, Hidden Embeddings and Prediction	11.2023 - Present
Prof. Vardan Papyan	University of Toronto
• Investigated Llama-2, Falcon, and GPT-2 token embeddings at hidden layers with their linearity, alignment of decoder Jacobians, and intermediate prediction entropy. Discovered distinct phases reflected in all metrics, varying by layer depth. <i>Submitted to ICML 2024.</i>	
Quantum Computing	05.2023 - 08.2023
Middleware Systems Research Group	University of Toronto
• Quantum circuit architecture selection for prediction of chemical bond separation energy.	

Publications

Sugolov, A., Emmenegger, E., Paterson, A.D., Sun L. Statistical Learning of Large-Scale Genetic Data: How to Run a Genome-Wide Association Study of Gene-Expression Data Using the 1000 Genomes Project Data. *Statistics in Biosciences* (2023).

Projects and Skills

Currently implementing and training a **denoising diffusion** model (repo).

Multihead extensions and small results based on Geshkovski et al. '**Clustering in Self-Attention Dynamics**'. Presented at Applied² Graduate Seminar, University of Toronto.

Course projects include **latent variable model** with **Hamiltonian Monte Carlo**. Coursework includes **variational inference** and **Bayesian graphical models**.

Programming: Python, Java, R
Technical: PyTorch, HuggingFace, Numpy, PennyLane, GitHub, ArchLinux, Slurm
Languages: English, Ukrainian, French (basic)

Awards & Honors

NSERC Undergraduate Summer Research Award	2023
University of Toronto	
Regent's Scholarship I, II, III, and Dean's List	2021-2024
University of Toronto	

Volunteering

Unissued Diplomas Project	02.2024 - Present
----------------------------------	-------------------