

Yair Schiff

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RESEARCH INTERESTS

Generative modeling, Optimal transport, AI for Science, AI for Social Good



EDUCATION

CORNELL UNIVERSITY – DEPARTMENT OF COMPUTER SCIENCE, New York, NY 2022 – Present

PhD student in Computer Science

Advisor: Professor Volodymyr Kuleshov

- *Fellowships:* Hal & Inge Marcus PhD Fellowship (2022-2023)
- *Awards:* Cornell Tech Outstanding TA Award (2023)
- *Teaching:* Applied Machine Learning (TA Fall 2022), Deep Learning (TA Spring 2023)

NEW YORK UNIVERSITY – COURANT INSTITUTE OF MATHEMATICAL SCIENCES, New York, NY May 2019

MS in Computer Science, GPA: 3.97/4.00

- *Relevant Coursework:* Advanced Machine Learning, Artificial Intelligence, Computer Vision, Deep Learning, Graphical Processing Units, Machine Learning, Mathematics of Deep Learning, Predictive Analytics

UNIVERSITY OF PENNSYLVANIA – COLLEGE OF ARTS AND SCIENCES, Philadelphia, PA May 2014

BA Summa Cum Laude with Distinction in Economics, GPA: 3.93/4.00

- *Academic Honors:* Phi Beta Kappa, Dean's list 2010-2014



RESEARCH AND PUBLICATIONS

PUBLICATIONS

Caduceus: Bi-Directional Equivariant Long-Range [ICML 2024](#)

DNA Sequence Modeling

Yair Schiff, Chia-Hsiang Kao, Aaron Gokaslan, Tri Dao, Albert Gu, Volodymyr Kuleshov

DySLIM: Dynamics Stable Learning by Invariant Measure for Chaotic Systems [ICML 2024](#)

Yair Schiff, Zhong Yi Wan, Jeffrey B. Parker, Stephan Hoyer, Volodymyr Kuleshov,

Fei Sha, Leonardo Zepeda-Núñez

InfoDiffusion: Representation Learning [ICML 2023](#)

Using Information Maximizing Diffusion Models

Yingheng Wang, **Yair Schiff**, Aaron Gokaslan, Weishen Pan, Fei Wang,

Christopher De Sa, Volodymyr Kuleshov

Semi-Autoregressive Energy Flows: Exploring Likelihood-Free [ICML 2023](#)

Training of Normalizing Flows

Phillip Si, Zeyi Chen, Subham Sekhar Sahoo, **Yair Schiff**, Volodymyr Kuleshov

Learning with Stochastic Orders [ICLR 2023](#)

Carles Domingo-Enrich, **Yair Schiff**, Youssef Mroueh

(Notable Top 25% acceptance)

Semi-Parametric Inducing Point Networks and Neural Processes [ICLR 2023](#)

Richa Rastogi, **Yair Schiff**, Alon Hachohen, Zhaozhi Li, Ian Lee, Yuntian Deng,

Mert R. Sabuncu, Volodymyr Kuleshov

Cloud-Based Real-Time Molecular Screening Platform with MolFormer [ECML PKDD 2022 Demo Track](#)
(*alphabetical order
equal contribution)
*Brian Belgodere**, *Vijil Chenthamarakshan**, *Payel Das**, *Pierre Dognin**,
*Toby Kurien**, *Igor Melnyk**, *Youssef Mroueh**, *Inkit Padhi**, *Mattia Rigotti**,
*Jarret Ross**, ***Yair Schiff****, *Richard A. Young**

Optimizing Functionals on the Space of Probabilities with Input Convex Neural Networks [Transactions of Machine Learning Research](#)
David Alvarez-Melis, ***Yair Schiff***, *Youssef Mroueh*

Augmenting Molecular Deep Generative Models with Topological Data Analysis Representations [ICASSP 2022](#)
(*equal contribution)
Yair Schiff*, *Vijil Chenthamarakshan**, *Samuel Hoffman**,
*Karthikeyan Natesan Ramamurthy**, *Payel Das**

Predicting Deep Neural Network Generalization with Perturbation Response Curves [NeurIPS 2021](#)
Yair Schiff, *Brian Quanz*, *Payel Das*, *Pin-Yu Chen*

Tabular Transformers for Modeling Multivariate Time Series [ICASSP 2021](#)
Inkit Padhi, ***Yair Schiff***, *Igor Melnyk*, *Mattia Rigotti*, *Youssef Mroueh*, *Pierre Dognin*,
Jarret Ross, *Ravi Nair*, *Erik Altman*

Image Captioning as an Assistive Technology: Lessons Learned from VizWiz 2020 Challenge [Journal of AI Research](#)
(*alphabetical order
equal contribution)
*Pierre Dognin**, *Igor Melnyk**, *Youssef Mroueh**, *Inkit Padhi**, *Mattia Rigotti**,
*Jarret Ross**, ***Yair Schiff****, *Richard Young*, *Brian Belgodere*

WORKSHOPS

Simple and Effective Masked Diffusion Language Models [ICML Workshops 2024](#)
Subham Sekhar Sahoo, *Marianne Arriola*, ***Yair Schiff***, *Aaron Gokaslan*,
Edgar Marroquin, *Justin T Chiu*, *Alexander Rush*, *Volodymyr Kuleshov*

Advancing DNA Language Models: The Genomics Long-Range Benchmark [AAAI Workshop 2024](#)
[ICLR Workshop 2024](#)
Evan Trop, *Chia-Hsiang Kao*, *Mckinley Polen*, ***Yair Schiff***, *Bernardo P. de Almeida*,
Aaron Gokaslan, *Thomas Pierrot*, *Volodymyr Kuleshov*

Optimizing Functionals on the Space of Probabilities with Input Convex Neural Networks [NeurIPS Workshop 2021](#)
David Alvarez-Melis, ***Yair Schiff***, *Youssef Mroueh*
Spotlight presentation

Gi and Pal Scores: Deep Neural Network Generalization Statistics [ICLR Workshop 2021](#)
Yair Schiff, *Brian Quanz*, *Payel Das*, *Pin-Yu Chen*

Characterizing the Latent Space of Molecular Deep Generative Models with Persistent Homology Metrics [NeurIPS Workshop 2020](#)
Spotlight presentation
Yair Schiff, *Vijil Chenthamarakshan*, *Karthikeyan Natesan Ramamurthy*, *Payel Das*

Alleviating Noisy Data in Image Captioning with Cooperative Distillation [CVPR Workshop 2020](#)
(*alphabetical order,
equal contribution)
*Pierre Dognin**, *Igor Melnyk**, *Youssef Mroueh**, *Inkit Padhi**, *Mattia Rigotti**,
*Jarret Ross**, ***Yair Schiff****

PREPRINTS

Cross-species plant genomes modeling at single nucleotide resolution using a pre-trained DNA language model

[bioRxiv](#)

*Jingjing Zhai, Aaron Gokaslan, **Yair Schiff**, Ana Berthel, Zong-Yan Liu, Zachary R Miller Armin Scheben, Michelle C Stitzer, Cinta Romay, Edward S. Buckler, Volodymyr Kuleshov*

Auditing and Generating Synthetic Data with Controllable Trust Trade-offs

[arXiv](#)

*Brian Belgodere, Pierre Dognin, Adam Ivankay, Igor Melnyk, Youssef Mroueh, Aleksandra Mojsilovic, Jiri Navartil, Apoorva Nitsure, Inkit Padhi, Mattia Rigotti, Jerret Ross, **Yair Schiff**, Radhika Vedpathak, Richard A. Young*

TALKS AND PRESENTATIONS

Topological Data Analysis and Beyond Workshop

[NeurIPS 2020](#)

- Presented spotlight poster “Characterizing the Latent Space of Molecular Deep Generative Models” ([video](#))

VizWiz Grand Challenge Workshop

[CVPR 2020](#)

- Presented winning submission to VizWiz Grand Challenge ([video](#))
- Presented “Alleviating Noisy Data in Image Captioning with Cooperative Distillation” ([video](#))

OPEN-SOURCE CONTRIBUTIONS

Caduceus

[Github.com](#)

- Authored codebase for long-range DNA sequence modeling using newly proposed Caduceus model.

swirl-dynamics

[Github.com](#)

- Added a project for modeling dynamical systems using a regularized objective that aims to preserve systems’ invariant measures

SPIN: Semi-Parametric Inducing Point Networks and Neural Process

[Github.com](#)

- Implemented Inducing Point Neural Processes and wrote code for training and evaluation

TabFormer: Tabular Transformers for Modeling Multivariate Time Series

[Github.com](#)

- Wrote code for training and evaluating GPT-like models on tabular data to generate new, synthetic data that matches the underlying distributions of the real table variables

pytorch-PPUU: Prediction and Policy-learning Under Uncertainty

[Github.com](#)

- Added a new dataset on which the self-driving policy could be trained
- Enhanced the self-driving vehicle’s policy to enable dynamic lane changes

PROFESSIONAL SERVICES

- ICML 2024 reviewer
- NeurIPS 2023 reviewer – [Top Reviewer Recipient](#)



WORK EXPERIENCE

GOOGLE, New York, NY

May 2023 – Oct 2023

Student Researcher

- Researched new methods for stabilizing autoregressive rollouts of dynamical system models
- Contributed to internal Google and open-source libraries for modeling dynamical systems

IBM WATSON MACHINE LEARNING, New York, NY

Aug 2019 – Aug 2022

Cognitive Software Developer

- Contributed to continuous development and testing of Watson Machine Learning products
- Facilitated weekly Cloud releases, Cloud Pak for Data platform releases, and the launch of AutoAI feature engineering on relational data, AutoAI Time Series, AutoAI Notebooks, and Federated Learning products
- Published 6 medium.com articles about Watson Machine Learning product releases
- Received Outstanding Technical Achievement Award for work on the release of AutoAI feature engineering on relational data
- Received CrushIT Team Excellence Award as part of the Watson Machine Learning Training team

Research Contributor to IBM Research AI Challenges

Aug 2019 – Aug 2022

- Volunteered to contribute to IBM Research AI challenges, working with the Trusted AI Department
- Member of the first-place winning team in the 2020 VizWiz Grand Challenge: Image Captioning as an Assistive Technology for the Visually Impaired
- Co-authored with the Trusted AI team on several publications in the fields of Generative Modeling, Molecular Discovery, Deep Learning Generalization, and AI for Social Good
- Received two 2021 IBM Research Accomplishments awards for contributions to (1) trustworthy AI generative modeling and (2) deployment of large-scale transformer models on OpenShift environments

SIMON-KUCHER AND PARTNERS, New York, NY

Sept 2014 – Aug 2017

Consultant

- Advised global companies spanning various industries – including internet, media, consumer electronic goods, and chemicals – on areas for better revenue capture
- Synthesized large data sets (e.g., 300 million+ client transactions), customer research (surveys & conjoint studies sent to thousands of respondents), and secondary research to create solutions to client needs



GROUPS AND AFFILIATIONS

GRADS FOR GENDER INCLUSION IN COMPUTING, New York, NY

Present

Member

- Member of a group dedicated to combating harassment, pushing for policy change, and creating supportive spaces

STUDENT-APPLICANT SUPPORT PROGRAM, New York, NY

Present

Volunteer

- Provide feedback and support to students applying to graduate programs in Computer Science and related fields

PHD PEER MENTOR PROGRAM, New York, NY

Present

Mentor

- Meet with fellow PhD student to provide guidance about graduate school life at Cornell Tech



SKILLS

- *Programming Languages:* C++, Java, Python
- *Deep Learning Frameworks:* PyTorch, PyTorch Lightning
- *Data Tools:* Excel, Stata, Tableau
- *Foreign Languages:* Fluent in Hebrew