Yair Schiff

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RESEARCH INTERESTS

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

EDUCATION

CORNELL UNIVERSITY – DEPARTMENT OF COMPUTER SCIENCE, New York, NY — Present
PhD candidate in Computer Science

- *Teaching:* Applied Machine Learning (TA Fall 2022)

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

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

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

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
Pierre Dognin, Igor Melnyk*, Youssef Mroueh*, Inkit Padhi*, Mattia Rigotti*, Jarret Ross*, **Yair Schiff****
*(*alphabetical order, equal contribution)*

UNDER REVIEW

Learning with Stochastic Orders
*Carles Domingo-Enrich, **Yair Schiff**, Youssef Mroueh*

Semi-Autoregressive Energy Flows:
Towards Determinant-Free Training of Normalizing Flows
*Phillip Si, Zeyi Chen, Subham Sekhar Sahoo, **Yair Schiff**, Volodymyr Kuleshov,*

Semi Parametric Inducing Point Networks
*Richa Rastogi, **Yair Schiff**, Alon Hacohen, Zhaozhi Li, Ian Lee, Yuntian Deng, Mert R. Sabuncu, Volodymyr Kuleshov*

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

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

ONLINE PUBLICATIONS FOR WATSON MACHINE LEARNING PRODUCT LAUNCHES

"Data, data everywhere…": Leveraging IBM Watson Studio for private data with Federated Learning — Medium.com
***Yair Schiff**, Jim Rhyness*

Unlocking your data's potential with IBM Watson Studio's AutoAI feature engineering on relational data — Medium.com
Yair Schiff

Breaking the Magicians' code with IBM Watson Studio's AutoAI Notebooks — Medium.com
Yair Schiff

Peeking behind the curtain with IBM Watson AutoAI Python Client — Medium.com
Lukasz Cmielowski, ***Yair Schiff****, Przemyslaw Czuba*

Automating the AI Lifecycle with IBM Watson Studio Orchestration Flow — Medium.com
Yair Schiff, *Rafał Bigaj*

Right on time(series): Introducing Watson Studio's AutoAI Time Series — Medium.com
Yair Schiff

PAST PROJECTS

Prediction and Planning Under Uncertainty
Research Assistant in Professor Yann LeCun's lab (under supervision of Dr. Alfredo Canziani)

- Contributed to ongoing research exploring planning under uncertainty in the context of self-driving vehicles
- Incorporated large aerial traffic dataset model training and enhanced vehicle's policy to enable lane changes

WORK EXPERINCE

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

CORNELL TECH K-12 INITIATIVE, New York, NY — Present
Volunteer

- Facilitate coding and learning events for local students to make Computer Science education more accessible

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

SKILLS

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