Lazar Atanackovic

Ph.D. Candidate – Machine Learning Researcher

University of Toronto & Vector Institute
The Edward S. Rogers Sr. Department of Electrical
& Computer Engineering

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Education

University of Toronto, (UofT), Toronto, ON
Ph.D., Electrical & Computer Engineering, 2020 - present, Supervisors: *Brendan Frey, Bo Wang*

University of British Columbia, (UBC), Vancouver, BC
M.A.Sc, Electrical & Computer Engineering, 2018 to 2020, Supervisor: *Lutz Lampe*
B.A.Sc, Electrical Engineering, 2014 to 2018, *with Distinction*

Research Positions

Valence Labs / Recursion Pharmaceuticals, Montreal, QC
Machine Learning Research Intern, Sep 2023 - Feb 2024

University of Toronto / Vector Institute, Toronto, ON
Research Assistant, Dept. of Electrical & Computer Engineering, 2020 - present
Teaching Assistant, Dept. of Electrical & Computer Engineering, 2021 - 2022

Mila - The Quebec AI Institute / University of Montreal, Montreal, QC
Research Intern, Dept. of Computer Science & Operations Research, May 2022 - Aug 2022

University of British Columbia, Vancouver, BC
Research Assistant, Dept. of Electrical & Computer Engineering, 2018 - 2020
Undergraduate Research Assistant, Dept. of Electrical & Computer Engineering, May 2017 - August 2017
Teaching Assistant, Dept. of Electrical & Computer Engineering, 2016 - 2020

University of Haifa, Haifa, Israel
Visiting Student Researcher, Acoustic and Navigation Lab, May 2019

Publications

[1] **Atanackovic L.**, Bengio E., *Investigating Generalization Behaviours of Generative Flow Networks*, Submitted to the International Conference on Machine Learning (ICML), 2024

[2] Neklyudov K., Brekelmans R., Tong A., **Atanackovic L.**, Liu Q., Makhzani A., *A Computational Framework for Solving Wasserstein Lagrangian Flows*, Submitted to the International Conference on Machine Learning (ICML), 2024

[3] Tong A., Malkin N., Fatras K., **Atanackovic L.**, Zhang Y., Huguet G., Wolf G., Bengio Y., *Simulation-Free Schrodinger Bridges via Score and Flow Matching*, Artificial Intelligence and Statistics (AISTATS), 2024

[4] **Atanackovic L.***, Tong A.*, Wang B., Lee L. J., Bengio Y., Hartford J., *DynGFN: Towards Bayesian Inference of Gene Regulatory Networks with GFlowNets*, Advances in Neural Information Processing Systems (NeurIPS), 2023

[5] Liu T., Fradkin P., **Atanackovic L.**, Lee L. J., *Energy-based Modelling For Single-cell Data Annotation*, in Machine Learning in Computational Biology (MLCB), 2022 – in PMLR

[6] Fradkin P., Young A., **Atanackovic L.**, Lee L. J., Frey B., Wang B., *A Graph Neural Network Approach to Molecule Carcinogenicity Prediction*, Bioinformatics, vol. 38, pp. i84-i91, 2022 – presented at ISMB

[7] **Atanackovic L.**, Lampe L., Diamant R., *Deep-learning Based Ship-radiated Noise Suppression for Underwater Acoustic OFDM Systems*, in Proceedings of OCEANS IEEE/MTS, 2020

[8] **Atanackovic L.**, Vakilian V.*, Wiebe D.*, Lampe L., Diamant R., *Stochastic Ship-radiated Noise Modelling via Generative Adversarial Networks*, in Proceedings of OCEANS IEEE/MTS, 2020

[9] **Atanackovic L.**, *Machine Learning Inspired Ship-radiated Noise Modelling And Cancellation for Underwater Acoustic Communication Systems*, Masters Thesis, *UBC*, 2020

[10] **Atanackovic L.**, Zhang R., Lampe L., Diamant R., *Statistical Shipping Noise Characterization and Mitigation for Underwater Acoustic Communications*, in Proceedings of OCEANS IEEE/MTS, 2019

[11] Huo Y., Prasad G., **Atanackovic L.**, Lampe L., Leung V. C. M., *Cable Diagnostics with Power Line Modems for Smart Grid Monitoring*, IEEE Access, vol. 7, pp. 60206-60220 2019

[12] Huo Y., Prasad G., **Atanackovic L.**, Lampe L., Leung V. C. M. *Grid Surveillance and Diagnostics Using Powerline Communications*, in Proceedings of the International Symposium on Power Line Communications, 2018 ***(Best Student Paper Award)***

Workshops / Presentations

[1] Neklyudov K., Brekelmans R., Tong A., **Atanackovic L.**, Liu Q., Makhzani A., *A Computational Framework for Solving Wasserstein Lagrangian Flows*, NeurIPS Workshop on Optimal Transport and Machine Learning, 2023

[2] Tong A., Malkin N., Fatras K., **Atanackovic L.**, Zhang Y., Huguet G., Wolf G., Bengio Y., *Simulation-Free Schrodinger Bridges via Score and Flow Matching*, ICML Workshop on Frontiers in Learning, Control, and Dynamical Systems, 2023

[3] Tong A.*, **Atanackovic L.***, Hartford J., Bengio Y., *Bayesian Dynamic Causal Discovery*, NeurIPS Workshop on Causal Dynamic Systems, 2022

[4] Liu T., Fradkin P., **Atanackovic L.**, Lee L. J., *Energy-based Modelling For Single-cell Data Annotation*, NeurIPS Workshop on Learning Meaningful Representations for Life (LMRL), 2022

[5] Fradkin P.*, **Atanackovic L.** *, Zhang M. R.*, *Robustness to Adversarial Gradients: A Glimpse into the Loss Landscape of Contrastive Pre-training*, ICML Workshop on Pre-training, 2022

[6] Fradkin P., Young A., **Atanackovic L.**, Lee L. J., Frey B., Wang B., *A Graph Neural Network Approach to Molecule Carcinogenicity Prediction*, Machine Learning in Computational Biology (MLCB) & NeurIPS Workshop on Learning Meaningful Representations for Life (LMRL), 2021

[7] Zhang R., Lampe L., Zhao H., *Sparsity-based Shipping Noise Analysis and Cancellation in Underwater Acoustic Communication*, Acoustical Society of America (ASA), 2018 **(Presenter: Atanackovic L. – on behalf of Lampe L.)**

Grants & Fellowships

Ontario Graduate Scholarship, (UofT), 2024
School of Graduate Studies Conference Grant, (UofT), Fall 2023 *Declined*, Winter 2023 *Declined*
NSERC Canadian Graduate Scholarship – Doctoral, (UofT), 2022-2023
NSERC Post Graduate Scholarship – Doctoral, (UofT), 2020-2022
Edward S. Rogers Sr. Graduate Scholarship, (UofT), 2020 - present
Vector Institute Student Research Grant, (UofT), 2020 - present
Graduate Support Initiative, (UBC), 2018 & 2019
British Columbia Graduate Scholarship, (UBC), 2019
NSERC Canadian Graduate Scholarship - Masters, (UBC), 2018
NSERC Undergraduate Student Research Award, (UBC), 2017

Honours & Awards

Best Student Paper Award ISPLC, 2018
UBC Electrical & Computer Engineering Capstone Industry Award, 2018
Charles Lindsay Thompson Scholarship, 2018
Captain C.Y. Wu Scholarship, 2018
B.A.Sc. Dean's Honour List, (UBC), 2016, 2017, 2018
Port Coquitlam Minor Hockey Scholarship, 2014
BC Passport to Education Scholarship, 2014
BC Graduation Program Examination Scholarship, 2014

Teaching Experience

Teaching Assistant, ECE 244 - Programming Fundamentals, Fall 2022 (UofT)
Teaching Assistant, ECE 421 - Introduction to Machine Learning, Winter 2022 (UofT)
Teaching Assistant, CPEN 211 - Introduction to Microcomputers, Fall 2016, 2017, 2018, 2019 (UBC)
Teaching Assistant, ELEC 311 - Electromagnetic Fields and Waves, Winter 2020 (UBC)
Teaching Assistant, ELEC 221 - Signals and Systems, Winter 2019 (UBC)

Supervision Experience

Undergraduate Research Supervisor, Undergraduate thesis supervision, ECE, 2021 (UofT)
Research Mentor, Undergraduate research experience program, ECE, 2020 (UBC)
Undergraduate Research Supervisor, Undergraduate thesis supervision, ECE, Winter 2019 (UBC)

Academic Service

Reviewing

MLCB 2023

NeurIPS LMRL Workshop 2022
NeurIPS Meta-learning Workshop 2022
ICML Pre-training Workshop 2022
IEEE Communications Letters 2020

Volunteering

Mentor, Graduate Application Assistance Program (GAAP), Dep. of Computer Science, 2023 (UofT)
Youth Mentor, High school research involvement program, ECE, Fall 2019 (UBC)

Extracurricular

Formula UBC - SAE Racing Team, UBC, Vancouver, BC
Student Engineer Co-captain, Electrical Systems Sub-team, 2016-2017
Student Engineer, Electrical Systems Sub-team, 2014-2016

BC Hydro, Vancouver, BC
Volunteering Engineering Assistant, Distribution Management System, Winter 2014

Media Coverage

"Student Profile", Faculty of Graduate and Postdoctoral Studies, UBC, 2020, Link to profile

"Pushing the envelope of underwater acoustic signal reliability", Dept. of Electrical & Computer Engineering, UBC, 2019, Link to story

Technical Skills

Programming Languages: Python, MATLAB, Julia, C, Verilog, Assembly, Visual Basic
Machine Learning Libraries: Pytorch, Jax, TensorFlow, SciKit-learn, MATLAB Machine Learning Toolbox
Tools & Software: GitHub, Quartus, ModelSim, Altium, LTspice, PScad, SolidWorks

Professional Affiliations

Engineers and Geo-scientists of British Columbia (EGBC), *Student Member*, 2016-2020
Institute of Electrical and Electronics Engineers (IEEE), *Student Member*, 2017-2020
Society of Automotive Engineers (SAE), *Student Member*, 2016-2018