AVISHEK (JOEY) BOSE

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EDUCATION

McGill / MILA *September 2018 - Present*
PhD Department of Computer Science *Supervisor: Prof. William Hamilton*
University of Toronto *September 2017 - August 2018*
M.aSc Department of Electrical and Computer Engineering *Supervisor: Prof. Parham Aarabi*
University of Toronto *September 2012 - April 2017*
B.aSc Department of Electrical and Computer Engineering
Minor in Mechatronics

Certificate in Engineering Business

EXPERIENCE

McGill University Jan 2019 - April 2019
Head TA

· Responsible for the successful organization of COMP 551: Applied Machine Learning Graduate Course.

FaceShield (Now Acquired) Aug 2018 - Present
Founder and CEO

· Founded FaceShield Inc. as a way to bring research done during Master's to the masses. The main mandate of FaceShield is to increase awareness on issues surrounding digital privacy of one's own photos.
· Created a tool that allows anyone to apply a privacy filter to their own photos.
· Acquired by an Israeli company D-ID in 2019

Borealis AI May 2017 - July 2018
Research Intern

· Published a paper to ACL on Adversarial Contrastive Estimation that effectively improves over Noise Contrastive Estimation approaches by using an Adversarial Adaptive Conditional Negative Sampler to sample harder negatives leading to better and faster convergence.
· Improved the performance of word embedding, knowledge graph embeddings and ordered embeddings on multiple benchmark tasks

University of Toronto Sept 2017 - Dec 2017
Co-Head TA and Co-Lecturer

· Created and delivered Lectures and Tutorials for a probability course aimed at 3rd/4th year ECE students.
· Responsible for creating and marking of quizzes and assignments

Architech May 2015 - Aug 2016
Junior Machine Learning Engineer

· Created a novel Eye Gaze Tracking algorithm using input video inputs from webcam's
· Applied Topic Modeling techniques to twitter to discover new emergent sentiments on news stories before they became viral

ACADEMIC ACHIEVEMENTS

Top 5 Impressive Graduating Students Nov 2018

· Presented to 5 students graduating from the University of Toronto who have made the most of their time. This led to an interview with Uoft News and an article feature.

Young Stars Estes Award May 2018

· Awarded on a competitive basis to graduate students and post-docs attending the Deep, fast and shallow learning in humans and machines conference in Indiana State University.

Gordon Slemon Design Award Oct 2017

· The Gordon Slemon Design Award is awarded for excellence in engineering design. It is awarded for the best 4th year design project based as judged by the department based on effective planning, scheduling, reporting, and excellence in design, execution, creativity, etc. The award is in the form of a $1000 cash prize along with an engraved plaque of all team members.

Centennial Thesis Award May 2017

· This award is offered to the fourth year student that receives the highest grade in the 4th year Design Project. One award is given for each program: electrical and computer engineering programs. Each award is in the form of a $500 prize and an accompanying certificate.

Dean's List April 2015,2017

· Awarded for academic performance for having an average higher than 80%

Uoft TrackOne Scholarship April 2012

· Awarded $2000 based on academic merit

Uoft ECE Presidents Scholarship (declined) April 2012

· Awarded $4000 based on academic merit

PUBLICATIONS AND FILED PATENTS

P.N. Ward, A. Smofsky, **A. J. Bose** (2019) "Improving Exploration in Soft-Actor-Critic with Normalizing Flows Policies" Invertible Neural Networks and Normalizing Flows Workshop ICML 2019.

A. J. Bose, W. L. Hamilton. (2019) "Compositional Invariance Constraints for Graph Embeddings" International Conference of Machine Learning 2019.

A. Cianflone, Z. Ahmed, R. Islam*, **A. J. Bose***, W.L. Hamilton. (2019) "Discrete off-policy policy gradient using continuous relaxations" Reinforcement Learning and Decision Making 2019.

A. J. Bose, W. L. Hamilton. (2018) "Compositional Fairness Constraints for Graph Embeddings" NeurIPS Relational Representation Learning Workshop, Montreal, Canada. **paper link**

A. J. Bose*, H. Ling*, Y. Cao (2018) "Compositional Hard Negative Mining for Visual Semantic Embeddings via an Adversary" NeurIPS Visually Grounded Language and Interaction Workshop, Montreal, Canada. **paper link**

Bose, Avishek Joey, and Parham Aarabi. "Disruption of Face Detection" U.S. Patent No. P7847US00. 13 Sept. 2018.

A. J. Bose, P. Aarabi (2018) " Adversarial Attacks on Face Detectors using Neural Net based Constrained Optimization.", IEEE MMSP, Vancouver, Canada. **ORAL and Best Paper Nominee arXiv link**

A. J. Bose*, Y. Cao*, H. Ling* (2018) " Adversarial Contrastive Estimation." **ORAL** In Proceedings of ACL 2018, Melbourne, Australia. **arXiv link**

R. Janzen, S. N. Yasrebi, **A. J. Bose**, A. Subramanian, S. Mann, " Walking through sight: Seeing the ability to see in a 3-D augmediated reality environment", Proc. IEEE GEM, pp. 313-4, 2014. **link**

INVITED TALKS AND PANELS

Mila Graph Representation Learning Group February 2019

· Talk on enforcing compositional invariance constraints for Node Embeddings in graph data structures. The research from this version of the talk was submitted to ICML 2019.

McGill Computational Linguistics Group November 2018

· Talk on applying Adversarial Contrastive Estimation for Image Caption Retrieval. The research from this version of the talk was later published at NeurIPS Visually Grounded Language and Interaction Workshop.

Facebook AI Research (FAIR) November 2018

· Talk on enforcing compositional fairness constraints for Node Embeddings in graph data structures. The research from this version of the talk was later published at NeurIPS Relational Representation Learning Workshop.

GeekPwn at DefCon: AI/Robotics and Cybersecurity June 2018

· Talk on Adversarial Attacks against break face detectors to an audience of security experts.

Huawei AI and Security Workshop June 2018

· Presented Research on Adversarial Attacks against face detectors to Huawei and other expert researchers in the field of adversarial machine learning.

UofT Engineering Science MSF Panel Discussion April 2018

· Participated as a panelist for 2nd and 3rd year Engineering Science students. Provided advice and direction to students entering machine learning and research in general.

PRESS COVERAGE

University of Toronto News "Meet five impressive graduating students who got the most of their U of T experience" **article link**

University of Toronto News "U of T Engineering AI researchers design privacy filter for your photos that disables facial recognition systems" **article link**

Forbes "AI Researchers Create 'Privacy Filter' That Disrupts Facial Recognition Technology" **article link**

CBC "U of T researchers developing tool to jam facial recognition software" **article link**

VentureBeat "University of Toronto researchers develop AI that can defeat facial recognition systems" **article link**

Toronto Star "U of T researchers design algorithm that dupes facial recognition detectors" **article link**

Science Daily "AI researchers design 'privacy filter' for your photos" **article link**