

Aman Bhargava

UNIVERSITY OF TORONTO ENGINEERING SCIENCE · MACHINE INTELLIGENCE

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Education

University of Toronto

Toronto, Ontario

BASc. ENGINEERING SCIENCE

Sept. 2018 - May 2022

- Major in Machine Intelligence, Minor in Robotics Engineering.
- *Relevant Coursework:* Matrix Algebra & Optimization, Algorithms and Data Structures, Digital and Computer Systems.

Scientific and Professional Experience

Researcher, MannLab Canada, University of Toronto, October 2019-Present

Toronto, Ontario

- **Collaborated with and lead** teams of masters students, undergraduates, and industry professionals to produce a variety of peer-reviewed research publications on **machine learning, signal processing, brain-computer interface, and wearable technology**.
- Generated novel scientific & engineering research questions, set out project plans, designed systems and apparatus, performed testing and validation, and published results in **peer-reviewed venues**.
- Rapidly acquired mathematical and scientific skill sets in order to carry out research objectives.

Co-Founder and CEO, CareTrack.io, July 2019-Present

Toronto, Ontario

- Designed and implemented a full-stack web-based **medical data entry & analytics platform** for assisted living facilities.
- Leverages modern UI, data visualization, and predictive algorithms to improve patient outcomes and nurse, doctor, and administrator productivity.
- Currently in **private beta** for data collection. Incorporated in July 2019.
- Utilizes Angular, Firebase, Chart.js, Python/Flask.

Software Engineer, Venture13, Summer 2019

Cobourg, Ontario

- Conceptualized and developed **full-stack web applications** using Angular and Firebase incorporating Google Calendar, Maps, Directions API's for **TheWeekendRoute, Venture13, and the Cobourg Police Force**.
- Created **robotics software suite** for CrossWing Solutions using OpenCV, Python, and JavaScript.
- Contributed **microprocessor programming**, implementing low power machine learning and signal processing with Nordic Semiconductor's SDK for wearable personal security device.

Publications

- [1] **A. Bhargava** and S. Mann, "Adaptive Chirplet Transform-Based Machine Learning for P300 Brainwave Classification", *IEEE Engineering in Medicine and Biology Society Conference on Biomedical Engineering and Sciences*, 2020 (Accepted)
- [2] **A. Bhargava**, K. O'Shaughnessy, and S. Mann, "A Novel Approach to EEG Neurofeedback via Reinforcement Learning", *Proc. IEEE Sensors*, 2020 (Accepted & Presented)
- [3] S. Mann, C. Pierce, **A. Bhargava**, C. Tong, K. Desai, K. O'Shaughnessy, "Sensing of the Self, Society, and the Environment", *Proc. IEEE Sensors*, 2020 (Accepted & Presented)
- [4] D. E. Garcia, Y. Liu, K. W. Zheng, Y. Tao, C. Pierce, P. V. Do, **A. Bhargava**, and S. Mann, "Aynography: Assessing the Visual Acuity of the Human Eye with SSVEP", *International Workshop on Multimedia Signal Processing*, 2020 (Submitted)

Honors & Awards

- 2020 **Undergraduate Student Research Award**, Natural Sciences and Engineering Research Council of Canada
- 2020 **Shaw Design Scholarship**, University of Toronto Faculty of Engineering Science
- 2019 **Engineering Alumni Network Scholarship**, University of Toronto Faculty of Applied Science and Engineering
- 2018 **President's Scholarship**, University of Toronto

Skills

- Programming:** Python, C, JavaScript, MATLAB, Arduino, ESP32, Java, HTML5/CSS3, ARM Assembly, Verilog
- Software:** PyTorch, NumPy, Pandas, SciKit Learn, Git, OpenCV, Vue.js, Firebase, Vim
- Techniques:** Supervised Machine Learning, Reinforcement Learning, Computing Workload Parallelization, Object-Oriented Programming

Extracurricular Activity

Consulting Group Director, University of Toronto Consulting Association, 2020-2021

Toronto, Canada

- Recruited a team of 36 University of Toronto students (undergraduates, Masters, and Ph.D's) out of a pool of over 100 applicants to solve management consulting problems for local **non-profits and startups** at UofT's largest consulting club.
- Worked with client organizations to understand issues with their operations and draft **problem statements**.
- Managed **on-boarding and training** of associates consultants and team-leads.
- Oversaw progress of 6 independent teams working to solve problems for real-world clients.
- **Presented** on behalf of the UTCA at a variety of venues to widen outreach and communicate professional and communal objectives.