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.
- Assisted with **microprocessor programming**, implementing low power machine learning and signal processing with Nordic Semiconductor's SDK for Amy Arthur's CLAXON project.

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 (Pending Review)

[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, "Ayinography: 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.