# ASEEM BARANWAL

## EDUCATION

**Ph.D. in Computer Science** Sep 2020 – Present
University of Waterloo. Supervised by Aukosh Jagannath and Kimon Fountoulakis.

**M.Math. in Computer Science (thesis option)** Sep 2018 – Apr 2020
University of Waterloo. Supervised by Jeffrey Shallit.

**B.Tech. in Computer Science** Jul 2012 – May 2016
Indian Institute of Technology Jodhpur.

## EXPERIENCE

- **Research Intern, Microsoft Research** May 2023 – Aug 2023
  Working with the Cloud and Infrastructure Security Group on graph ML for security.
- **Research Intern, Google Research** Oct 2022 – Dec 2022
  Worked with the Graph mining group on scalable GNNs for sparse graphs.
- **Software Engineer, Microsoft Corporation** Jun 2016 – Jul 2018
  Worked with the Azure compute group on distributed systems and anomaly detection.

## PUBLICATIONS & MANUSCRIPTS

- **Optimality of Message-Passing Architectures for Sparse Graphs**. A. Baranwal, K. Fountoulakis, A. Jagannath. arXiv preprint arXiv:2305.10391, 2023.
- **Effects of Graph Convolutions in Multi-layer Networks**. A. Baranwal, K. Fountoulakis, A. Jagannath. International Conference on Learning Representations (ICLR), 2023. *(Spotlight)*
- **Graph Attention Retrospective**. K. Fountoulakis, A. Levi, S. Yang, A. Baranwal, A. Jagannath. Workshop on Anchoring Machine Learning in Classical Algorithmic Theory, 10th International Conference on Learning Representations (ICLR), 2022. *(Best paper award)*
- **Graph Convolution for Semi-Supervised Classification: Improved Linear Separability and Out-of-Distribution Generalization**. A. Baranwal, K. Fountoulakis, A. Jagannath. International Conference on Machine Learning (ICML), 2021. *(Spotlight)*
- **Antisquares and Critical Exponents**. A. Baranwal, J. Currie, L. Mol, P. Ochem, N. Rampersad, J. Shallit. arXiv preprint arXiv:2209.09223, 2022.
- **Ostrowski-automatic sequences: theory and applications**. A. Baranwal, L. Schaeffer, J. Shallit. Theoretical Computer Science 858, pp. 122–142, 2021.
- **Decision algorithms for Ostrowski-automatic sequences.** A. Baranwal. MMath Thesis, University of Waterloo, School of Computer Science, 2020.
- **Repetitions in infinite palindrome-rich words**. A. Baranwal, J. Shallit. In Combinatorics on Words. WORDS 2019. LNCS vol. 11682, Springer, pp. 93–105, 2019.
- **Critical exponent of balanced words via the Pell number system**. A. Baranwal, J. Shallit. In Combinatorics on Words. LNCS vol. 11682, Springer, pp. 80–92, 2019.

## AWARDS AND ACHIEVEMENTS

- Recipient of Ontario Graduate Scholarship and President's Graduate Scholarship 2023–2024
- Top reviewer award, Learning on Graphs conference 2022
- Graduate Excellence Awards, University of Waterloo 2020–2022
- Microsoft Engineering Star Award – Changing Status Quo 2017
- Ranked 29 at Google APAC (now Kick Start) 2016
- Team ranked 14 at ACM ICPC Asia regionals 2015

## MISCELLANEOUS

- Reviewed/reviewing for the following conferences: NeurIPS, ICLR, LoG, UAI.
- Helped underprivileged kids with education at SOS Children's Villages of India 2016–2018
- Associate member, National Cyber Safety and Security Standards India 2017–2018
- President, Programming Club IIT Jodhpur 2013–2014
- Problem setter for ACM ICPC preliminary contests in India 2015–2016