

# Hugh Morison

235 Ypres Green SW  
Calgary, AB T2T 6M4

(403)–618–1155  
hugh.morison@queensu.ca  
hughmorison.ca

## Education

- **Ph.D. Engineering Physics** Sep. 2019 - Present  
*Queen's University - Shastri Lab* Kingston, ON
  - Experimental research in neuromorphic computing with silicon photonics
  - Mitacs Accelerate Fellowship with Huawei Canada
  - Relevant courses: Nanophotonics, Reinforcement Learning, Quantum/Nonlinear Optics, Active silicon photonic devices
- **B.A.Sc. Engineering Physics (Computer Engineering Option)** Sep. 2015 - Apr. 2019  
*Queen's University* Kingston, ON
  - Relevant courses: A.I. & Interactive Systems, Neural & Genetic Computing, Quantum Mechanics, E/M Theory, Algorithms, Computer Architecture, Image Processing, Digital Systems, Computational Engineering Physics

## Work Experience

- **Teaching Assistant** Sep. 2019 - Present  
*Queen's University* Kingston, ON
  - Courses of Instruction: Fourth-year engineering physics design projects, third-year analog/digital electronics, second-year engineering physics laboratory
- **Student Programmer** May 2019 - Aug. 2019  
*GEOSLOPE International* Calgary, AB
  - Web development in ASP.NET. Implemented new payment system for web-store and integration with enterprise CRM software.

## Journal Articles

- Graphene-based photonic synapse for multi wavelength neural networks  
*Marquez, Morison, et al. MRS Advances, vol. 5, no. 37–38*
- Silicon photonics for artificial intelligence applications  
*Marquez et al. Photoniques, no. 104*
- Photonic pattern reconstruction enabled by on-chip online learning and inference  
*Marquez et al. J. Phys. Photonics 3*
- Monolithic Silicon Photonic Architecture for Training Deep Neural Networks with Direct Feedback Alignment *Filipovich et al. Preprint: arXiv:2111.06862*

## Conference Papers

- A graphene-based synapse for photonic neural networks  
*Marquez, Morison, et al. 2020 IEEE Photonics Conference*
- On-chip online learning and inference for photonic pattern recognition  
*Marquez et al. Conference on Lasers and Electro-Optics, OSA 2021*
- Training Deep Neural Networks in Situ with Neuromorphic Photonics  
*Filipovich et al. 2020 IEEE Photonics Conference*