NABILA ABRAHAM

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EDUCATION

RYERSON UNIVERSITY
MASc. in Electrical & Computer Engineering
2017 – Present | Toronto, ON

- Research focus in medical image segmentation using deep learning
- Interested in probabilistic methods, VAEs, adversarial training, disentanglement

RYERSON UNIVERSITY
B.Eng in Biomedical Engineering
2012 – 2017 | Toronto, ON

Capstone thesis: *Wireless intraoperative neuromonitoring system for spinal surgery*

- Created 90V TENs machine to stimulate somatosensory evoked potential (SSEP)
- Assisted in design and fabrication of acquisition circuit
- Assisted in SSEP processing

TEACHING

Teaching Assistant (TA) for various courses where I supervise 20-30 students in both hardware [H] and software [S] courses:

- ELE532: Signals & Systems [S]
- ELE202: Electric Circuits [H]
- BME802: Human Computer Interaction [H+S]
- DG8002: Digital Media Environments [S]

SKILLS

- Python, MATLAB, C++, Azure
- PyTorch, Keras, Git, ROS
- Technical Writing

WORK EXPERIENCE

Ryerson Collaboratory | Research Technology Assistant
Jan 2018 – March 2019

- Hosted beginner-level workshops on machine learning
- Provided tutorials on fabrication equipment such as 3D printers, laser cutters, digital embroidery machine and basic electronics

Toronto Hydro Electric Systems | Senior Technical Student
Sept 2015 – Sept 2016

- Ran short circuit simulation studies using the CYME software
- Conducted protection and co-ordination studies on transformer stations to update existing relay settings

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RESEARCH

Ryerson Multimedia Lab | Graduate Student Researcher
Sept 2017 – Present

- Investigating loss functions and generative models to improve semantic segmentation of medical data
- Researching multi-modal data fusion using correlation analysis
- Working with Shaftesbury VR to develop predictive cues on player stress using time series analysis on biomedical signal data

VOLUNTEER

Ryerson Rams Robotics Team | Vision System Developer
Jan 2019 – Present

- Integrating recognition models into the vision pipeline using ROS

IEEE Ryerson Chapter |Graduate Student Representative
Sept 2018 – Present

- Organize monthly journal clubs with graduate students to discuss literature in deep learning
- Assist in planning outreach/ networking events with AI companies

PUBLICATIONS

[1] **N. Abraham** and N. Khan, "A Novel Focal Tversky loss function with improved Attention U-Net for lesion segmentation", *Accepted at IEEE International Symposium on Biomedical Imaging (ISBI)*, 2019.

[2] N. Khan, **N. Abraham**, M. Hon and L. Guan, "Machine Learning on Biomedical Images: Interactive Learning, Transfer Learning, Class Imbalance and Beyond", *Accepted at IEEE International Conference on Multimedia Information and Processing (MIPR)*, 2019.