NABILA ABRAHAM

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EXPERIENCE

Data Scientist | Data Science Health – Loblaw Companies Canada | Toronto, ON Feb 2020 – Present

- Leading COVID19 data migration by building in house probabilistic matching systems in **GCP** to migrate millions of records of patient data between two source systems. Specifically, built the match framework with high confidence matches resulting in a **76% match yield boost** over legacy methods with **90% specificity.**
- Built a COVID19 **demand forecasting insights** dashboard in **Datastudio** to assist pharmacy business units in preparation for the COVID19 vaccination rollout using historical flu combined with survey data analysis.
- Currently investigating **knowledge graphs, graph neural networks and graph databases (neo4j)** for in-house entity resolution, patient journey mapping and predictive health analytics.
- Leading Research Huddles, a company initiative to share **applied R&D ideas** & **consult on ML projects.**

Assistant Instructor | University of Toronto – SCS, Fintech | Toronto, ON Oct. 2020 – Present

- Graded weekly assignments, providing feedback on code including but not limited to: Visualization (PyViz, Matplotlib), Analytics (Pandas, NumPy, SQL) Machine Learning and Blockchain (Solidity smart contracts).
- Held office hours for over **30** students to reinforce class ideas such as Gradient Descent, Natural Language Processing (NLP) and programming, received a **4.91/5.0** satisfaction rating among attendees.

Deep Learning Researcher | Lunenfeld-Tanenbaum Research Institute | Toronto, ON July 2019 – Jan 2020

- Built a **3d-CNN model** and **3d gradient-class activation maps** (Grad-CAM) for prostate cancer detection using in house collected MR data. Additionally, extended the use of the **focal Tversky loss function** for 3d applications.
- Using 3d-CNNs, co-authored a publication showing improved model calibration when compared to a manual PI-RADS model by a clinician.

EDUCATION

Ryerson University **| Master of Applied Science, Electrical Eng.** Sept. 2017– Oct 2019

- **Thesis**: Towards improved medical image segmentation
- **Awards**: Received $21K through Graduate Fellowship (2017, 2018) & Norman Esch Entrepreneurship Award

Ryerson University **| Bachelor of Engineering, Biomed Eng.** Sept. 2012– Jun 2017

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

PATENTS & PUBLICATIONS

- **Patent**: Stress management in clinical settings. United States Patent US20210125702A1.
- **Publication**: Deniffel, Dominik, **Abraham, Nabila** et al. "Using decision curve analysis to benchmark performance of a magnetic resonance imaging–based deep learning model for prostate cancer risk assessment." European Radiology 30.12 (2020): 6867-6876.
- **Publication**: **Abraham, Nabila**, and Naimul Mefraz Khan. "A novel focal tversky loss function with improved attention u-net for lesion segmentation." 2019 IEEE 16th International Symposium on Biomedical Imaging (ISBI 2019). IEEE, 2019.

ACTIVITIES

Graph Neural Networks stream owner | Aggregate Intellect Socratic Circles March 2020 – Present
Machine Learning Mentor | SharpestMinds March 2020 – Present
Machine Learning Mentor | Ryerson Rams Robotics March 2019 – Oct 2019

SKILLS

Machine Learning: Deep learning (PyTorch, Keras, DGL, Pytorch-Geometric), NLP (nltk, spacy, HuggingFace)
Analytics: Python (Pandas, NumPy, Scikit-Learn, SciPy, Django, Flask), SQL, Bash (Shell), Spark
MLOps: MLFlow, Cloud (GCP, AWS), Dashboarding (DataStudio, Streamlit, Dash)