NABILA ABRAHAM

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SKILLS

- **Machine Learning:** Deep learning (PyTorch, Keras, DGL, Pytorch-Geometric), NLP (HuggingFace, nltk, spacy)
- **Analytics:** Python (Pandas, NumPy, Scikit-Learn, SciPy, Django, Flask), SQL, Bash (Shell), Spark
- **MLOps:** Kubernetes, Git, Docker, CI/CD, ONNX, Helm, Ray Serve, Pytest, MlFlow, MetaFlow, Kubeflow
- **Cloud:** AWS – EKS, Lambda, SNS, SQS. GCP – CloudFunction, AI Notebooks, DataStudio, Kubeflow Pipelines
- **Databases:** AWS Redshift, neo4j, GCP BigQuery, MongoDB

EXPERIENCE

Senior MLOps Engineer II | Covera Health | NYC, New York/Remote — Sept 2021 – Present

- Design, develop and maintain batch production **transformer** pipelines for various **NLP** tasks including report segmentation, entity detection and pathology prediction using **AWS Batch** and **MetaFlow** for orchestration
- Enforce **software engineering best practices** through Github workflows for meeting code coverage, linting & style
- Built and maintain CPU based **EKS cluster** for in house **NLP APIs** and frontend demo for internal stakeholders
- Retrofit NLP pipelines to be run on CPU machines by **quantizing Adapter-based BERT models,** standardizing to **ONNX** and deploying via **Ray Serve** on EKS for **near real-time inference**, **reducing inference costs by 8x**

Data Scientist | Data Science Health – Loblaw Companies Canada | Toronto, ON — Feb 2020 – Aug 2021

- Created and led **Research Huddles**, a company initiative to **share applied R&D ideas** & **consult on ML projects**.
- Developed **knowledge graph embedding systems** for patient disease progression mapping with several drug ontologies (RXNORM, ATC, UMLS) using **DGL-KE** and **PyTorch-Geometric**.
- Led COVID19 data migration by building **in house probabilistic matching systems** in **GCP** to migrate millions of records of patient data between two source systems. Built GCP workflows to ingest data from legacy systems into **GCP using Cloud Run & Cloud Functions.** Additionally, built the match framework in Python using NLP strategies to get high confidence matches resulting in a **76% match yield boost** over legacy methods with 90% specificity.
- Built a COVID19 demand forecasting insights dashboard in **GCP Datastudio** to assist pharmacy business units in preparation for the COVID19 vaccination rollout using historical flu combined with survey data analysis.

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)** in PyTorch for prostate cancer detection using thousands of in house collected, 3D-MR data. Additionally, extended the use of the focal Tversky loss function for 3d applications by migrating codebase from Keras to PyTorch.

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

Machine Learning Mentor | SharpestMinds — March 2020 – Present

Graph Neural Networks stream owner | Aggregate Intellect Socratic Circles — March 2020 – Aug 2021