Akathian SANTHAKUMAR

Candidate, MSc. Computer Science | HBSc. Computer Science and Neuroscience

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KEY COMPETENCIES

Languages	**Python**, **TypeScript**, **JavaScript**, **Java**, **Matlab**, **R**, C, Shell Scripting
Artificial Intelligence	**ML/DL Frameworks** (PyTorch, Tensorflow, Keras, NumPy, Scikit-learn, Gensim), **MLOps** (Docker, docker-compose, AWS Sagemaker), **ML/DL Algorithms**
Developing Experience	**Backend** (Node.js, Django, Flask), **DB** (MySQL, NoSQL), **Frontend** (Angular, React.js, Django) **Infra** (Docker, Apache Airflow, Redis, SonarQube, Kubernetes, Prometheus, Grafana)

EDUCATION

2022 - Present — **MSc, Computer Science,** Toronto Metropolitan University.
Research Focus : Deep learning solutions for subdural hematoma risk assessment and classification

2017 - 2022 — **HBSc, Double Major in Neuroscience, Computer Science,** University of Toronto.
Honors Thesis : A neural network model of visual word recognition

EXPERIENCE

September 2024 – Present — **Graduate Teaching Assistant, TORONTO METROPOLITAN UNIVERSITY, Toronto, ON**
CPS 118, CPS 213, CPS 521
Matlab | Computer Organization | Data Science

March 2022 – May 2023 — **Machine Learning Engineer, MARZ VFX, Toronto, ON**
Engineering ML apps, data pipelines, ML models and supporting ML infrastructure for VFX tasks
- Spearheaded pivotal discussions in system design meetings for LipDub AI and Vanity AI, contributing to the development of cutting-edge AI infrastructure that facilitated Hollywood-grade automated lip-syncing and accelerated, high-quality VFX enhancements, respectively.
- Sped up a data pipeline by over 300x by optimizing db calls, model compilation (ONNX runtime) and general code quality
- Built an end-to-end ML webapp for eye bag, acne and deaging edits that meet Hollywood standards with 5 team members, saving artists over 90% of their time.

Python | Systems Design | Docker-Compose | Tensorflow | Apache Airflow | ONNX | MySQL | MongoDB | Django

September 2021 – April 2022 — **Deep Learning Research Programmer, UNIVERSITY OF TORONTO DEPT. OF PSYCHOLOGY, Toronto, ON**
Developed neural network models of how humans produce, comprehend, and understand language
- Researched and coded the python (PYLens) translation of the CLens neural network simulator implementation of Simple Recurrent Backpropogation Through Time (SRBPTT)
- Analyzed and interpreted results of neurological computational models of language processing to evaluate performance and how well the model has simulated neurological systems

Python | C | PyTorch | Research

September 2021 – December 2021 — **Machine Learning Engineer, 16 BIT, Toronto, ON**
Engineered neural networks to infer BMD from x-ray images and survival predictions in COVID-19 patients
- Researched and implemented independantly DeepHit, COX, XGBoost, and DeepSurvivalMachine algorithms to COVID-19 patient data to predict clinical outcomes
- Built a pipeline to run multiple experiments to obtain the model that could predict risk score the best

PyTorch | XGBoost | PCA | Random Forest | Survival Analysis | TensorBoard | conda | docker | numpy | CUDA

January 2021 – August 2021 — **Software Developer, BIORENDER, Toronto, ON**
Focused on features, APIs and the database before working on user recommendations, A/B tests and data.
- Coded and A/B tested a scoring function to match over 6k users to field specific templates to investigate whether recommending templates to a user would increase their usage
- Engineered, trained and tested document classifying and clustering algorithms to recommend templates most similar to the user's illustrations
- Implemented the Flagsmith A/B testing platform, enabling over 25 developers and project managers to test any number of features risk-free, and investigate whether the feature improves metrics

React.js | Node.js | Python | numpy | scikit-learn | Tensorflow | MongoDB | AWS | Heroku | TypeScript | Git

September 2019 – April 2020 — **Innovation Engineer (R&D Application Developer), CIBC, Toronto, ON**
Prototyped a digital assistant by researching and implementing frontend, backend & infrastructure tech.
- Developed a queueing system to set event processing order, capable of efficiently organizing events
- Built a neural network predicting user's overall sentiment based on their gestures, facial expression and what they say so that the assistant can change how she answers the user's questions

Node.js | Python (AI & Edge Computing) | AWS | Agile | Git (GitFlow) | MySQL | Mocha/Chai | React.js | IoT | Jira