Karthik Raja Kalaiselvi Bhaskar

Researcher · Data Scientist · Machine Learning Engineer · Software Engineer

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Education

University of Toronto , M.A.Sc, ECE, Machine Learning	CGPA : 3.94/4	2018 - 2020	*Toronto, Canada*
Anna University, B.Eng, Electronics and Communication Engineering	CGPA : 3.74/4	2012 - 2016	*Chennai, India*

Skills

Programming	Python, SQL, Java, C++, Git, Linux, Hadoop, Spark
Framework	PyTorch, Tensorflow, Keras, MySQL, MongoDB, Numpy, Pandas, Scikit-Learn, Scipy, Plotly, Seaborn, MatplotLib, AWS, GCP, Azure, Tableau, Flask, AngularJs, NodeJs, HTML, CSS, Bootstrap
Research	Machine Learning, Deep Learning, Reinforcement Learning, Optimization, Recommendation System, Transfer Learning, Computer Vision, Natural Language Processing

Work Experience

Diversio — *Toronto, Canada*

Machine Learning Engineer - Part Time — *May 2020 - Present*

- **Built** a text classifier using Word Embedding, LSTM, and Transformers.
- **Created** a **Diversity and Inclusion score** that reflects employee experience within organizations.
- **Designed** a Deep Learning based **Recommendation System** using the diversity and inclusion score.

TD Canada Trust — *Toronto, Canada*

Machine Learning and Data Science Intern — *May - Aug. 2018 and May - Aug. 2019*

- **Developed a Deep Learning model** that **detects** and prevents the cyberattack before it happens (**ProjectX**).
- **Built Unsupervised Auto Tagging algorithm** and Automatic Rule Synthesis for **Octavius**.
- **Formalized** an **Automatic Rule synthesis algorithm** for Octavius using Deep Reinforcement Learning to **improve overall defense mechanism**.

Infosys Ltd — *Chennai, India*

Software Engineer — *May 2016 - Aug. 2017*

- Project deals with retail side application supported by **Apple** open to outside as well as Internal to Apple.
- **Performed root cause analysis** and carried out recommended changes.
- **Conducted impact analysis** on new changes before moving the code to production systems.
- **Integrated** changes in production environment with **minimal impact to existing functionalities**.
- **Extensively monitored** the system to make sure **business users are not impacted**.

Research

University of Toronto — *Toronto, Canada*

Machine Learning Researcher — *Sep. 2018 - Jan. 2020*

- **Designed** a Deep Learning based **Recommendation System** for **Wolseley's** e-commerce website from scratch to production.
- Used NLP, Matrix Factorization, Collaborative Filtering, Bayesian Optimization and Deep Learning techniques such as MLP, Autoencoder, LSTM, etc
- **Achieved** a personalized **NDCG** score of **72.4%** and **improved** the **One-Product Hit Ratio** to **100%.**

Projects

Multi Agent Tennis - Collaboration and Competition — *Toronto, Canada*

Reinforcement Learning - Multi Agents - DDPG - Experience Replay - PyTorch — *Apr. 2020*

- Set-up: Two-player game where agents control rackets to bounce ball over a net without dropping. Positive reward **+0.1**, Negative reward **-0.01**.
- Built **Multi Agent DDPG** algorithm, achieved an **average reward** of **+0.5** over **100 episodes**.

Hyper Face — *Toronto, Canada*

Deep Learning - Computer Vision - FRCNN - PyTorch, OpenCV — *Aug. 2019*

- Built a **Multi-Task CNN** to recognize **face** and to predict the **facial landmark points, visibility, pose and gender** with **90.68%** accuracy.

Facebook Social Network Prediction — *Toronto, Canada*

Machine Learning - Kaggle - Random Forest - Feature Engineering — *May 2019*

- **Predicted missing social network links** to recommend users given a **directed social graph** with **F1 score** of **92.41%**

Other Projects — *Toronto, Canada*

Reinforcement Learning - Deep Learning - Machine Learning - Cyber Security — *Jan. 2018 - Apr. 2020*

- Human like Chess Engine, Microsoft Malware Detection, Stackoverflow Tag Predictor, Quora Question Similarity, Navigation, DefenseGAN, etc
- Plese visit **https://www.comm.utoronto.ca/ kbhaskar/**

Positions of Responsibility

Sep. 2018 - Present	**Teaching Assistant - UofT**, Fundamentals of Artificial Intelligence, Introduction to Machine Intelligence, Programming Languages, Economic Analysis and Entrepreneurship.	*Toronto, Canada*
Sep.2018 - Apr. 2019	**Project Lead & ML Engineer - UofT Data Science Team**, Mentored undergraduate students throughout different Deep Learning projects focused on CV, NLP, etc.	*Toronto, Canada*
Sep. 2018 - Apr. 2019	**ML Engineer. - WearTech**, Succeeded building Deep learning based Face Recognition algorithm to help people with a neurological disorder called Prosopagnosia.	*Toronto, Canada*