

# 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
- Please visit <https://karthikraja95.github.io/>

## 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