

# VITHURSAN THANGARASA

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## EDUCATION

### MASc, Machine Learning & Artificial Intelligence

#### Machine Learning Research Group (MLRG), University of Guelph

📅 May 2017 – Present    📍 Guelph, Ontario

- Research focuses on developing lifelong learning, meta-learning and curriculum learning algorithms for DNN models to autonomously learn online over continuous streams of non-stationary data
- Supervised by Dr. Graham W. Taylor

### BEng, Engineering Systems & Computing (Honours, Co-op)

#### University of Guelph

📅 Sept 2012 – Apr 2017    📍 Guelph, Ontario

## EXPERIENCE

### Machine Learning Engineer, Computer Vision

#### Tesla, Inc.

📅 May 2017 – Present    📍 Fremont, California

- Working with the Advanced Technology Group (ATG) on confidential future products and computer vision systems for Tesla's vehicles

### Machine Learning Engineer

#### Scotiabank - Artificial Intelligence & Machine Learning Group

📅 Sept 2016 – Dec 2016    📍 Toronto, Ontario

- Proposed and worked on an AI-Powered Financial Chatbot to provide significant business value for Scotiabank's Customer 360° Intelligence
- Implemented a generative dialogue model using novel Deep Learning techniques for Natural Language Understanding and Generation
- Trained generative models on Amazon EC2 P2 instances using dialogue datasets, DevOps tools and Distributed TensorFlow

### Hardware and Systems Developer

#### ON Semiconductor - Medical & Wireless Products Division

📅 May 2016 – Aug 2016    📍 Waterloo, Ontario

- Implemented a power supply and clock calibration firmware library for RSL10, an ultra-low-power multi-protocol BLE 5.0 SoC
- Performed hardware and firmware verification on the BLE 5.0 Security Stack: GAP/GATT pairing and bonding process for RSL10

### Software Engineer, Video Compression

#### Evertz Microsystems Ltd. - Canadian Headquarters

📅 Jan 2015 – Aug 2015    📍 Burlington, Ontario

- Independently researched and implemented a Capped Variable Bit-rate algorithm for Real-Time H.264 video encoders/transcoders

### Mobile Application Developer, Android

#### Jamdeo Ltd. (Flextronics & HiSense Joint Venture)

📅 May 2014 – Aug 2014    📍 Oakville, Ontario

- Developed security libraries for secure D2D communication in the core of an Internet of Things (IoT)-based Android application

## SOFTWARE EXPERTISE

Languages: Python C MATLAB

Deep Learning: PyTorch TensorFlow

Deep Learning Models: CNN RNN  
LSTM GAN VAE Seq2Seq

Software Tools: Scientific Python Stack  
NLTK Visual Studio Code Atom

DevOps Tools: AWS Terraform  
CloudFormation Docker Jira Git

## HARDWARE EXPERTISE

Languages: VHDL Verilog

Design Tools: Xilinx ISE Vivado HLS  
GNU ARM Eclipse

Hardware: Embedded Systems  
Xilinx Zynq-7000 ARM Cortex-M

## PROJECTS

🔗 **Magnet Loss for Metric Learning**  
PyTorch implementation of the Magnet Loss paper from Facebook AI Research

🔗 **VAE with Gumbel-Softmax**  
TensorFlow implementation of the Concrete Distribution paper from Google DeepMind

🔗 **Terraform + AWS**  
Built a tool to automate provisioning of AWS Spot Instances for Deep Learning workloads using Terraform

## ACHIEVEMENTS

### Deep Learning & Reinforcement Learning Summer School

#### University of Montréal

📅 June 2017 – July 2017

- Accepted with Canadian Institute for Advanced Research (CIFAR) scholarship
- 1 of 225 admitted out of an applicant pool of 1,130 from around the world