Lalitha T. Ganesan

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Summary

Senior software engineer experienced in embedded systems and machine learning. Currently pursuing an M.S. in Computer Science with a specialization in Machine Learning from Georgia Institute of Technology. Seeking a position as a senior software engineer focused in machine learning.

Education

Georgia Institute of Technology 2015 – 2019 (expected)
Master of Science in Computer Science, specialization in Machine Learning
Relevant Courses Completed:
CS 7641 Machine Learning
CS 7642 Reinforcement Learning and Decision Making
CS 7646 Machine Learning for Trading
CS 7637 Knowledge-Based AI

Carnegie Mellon University 2009 – 2013
Bachelor of Science in Electrical and Computer Engineering

Skills

Programming Languages:	C, Python, C++, MATLAB, Simulink
Machine Learning Tools/Libraries:	scikit-learn, OpenAI, Keras, TensorFlow
Embedded/Software Engineering Skills:	Board bring-up, BSP, OS fundamentals, ACPI, Agile
Tools:	Visual Studio, PyCharm, Git, Perforce, JTAG/Trace32

Work Experience

Qualcomm, Inc. Senior Engineer
San Diego, CA 2013 – Present
– Design and develop device drivers to enable Windows OS on Snapdragon chipsets.
– Developer for Unified Extensible Firmware Interface (UEFI).
– Proficient in debugging issues seen in boot and high-level OS.
– Drove adoption of Python-based automated triage crash analysis system (PyKd). Worked on prototype to demonstrate value added to team, wrote multiple Python scripts for auto-triaging various types of crashes, and trained engineers to write their own scripts using their domain knowledge.

Qualcomm, Inc. Graphics Software Intern
San Diego, CA Summer 2012
– Developed logging tool for the Adreno GPU that records OpenGL ES 2.0 function calls and displays shaders and textures referenced during test runs.

Qualcomm, Inc. Software Automation and Test Intern
San Diego, CA Summer 2011
– Developed new feature for the Qualcomm eXtensible Diagnostic Monitor (QXDM) Database Importer tool creating a faster and more efficient way to import new database fields to the QXDM database.

Projects

Solving Lunar Lander using DQN Learning Fall 2017
– Implemented a solution using Deep Q-Learning (DQN) for the Lunar Lander Atari-based game (environment provided by OpenAI).
– Analyzed the performances of DQN variations, like adding experience replay, using a target network, and adding a second Q-function via Double DQN.
– Used the Keras library with TensorFlow backend to create and tune the deep neural network models.

Correlated Q-Learning (CE-Q) in Soccer Fall 2017
– Implemented and analyzed the performances of various Q-Learning algorithms (standard Q-Learning, Friend-Q, Foe-Q, and CE-Q) in a grid-based soccer game environment.

Comparing and Contrasting TD-Learning Methods Fall 2017
– Implemented a TD (lambda) algorithm and varied parameters (lambda, alpha, number of training repeats, when to update model, etc.) to show how they affect performance in a 1-D random walk example.

Analyzing Supervised Learning Methods for Classification Spring 2017
– Using the scikit-learn library, applied five models (decision tree, boosting, SVM, kNN, and neural network) to two open source datasets.
– Used a grid search to find the ideal hyper-parameters for each model.
– Evaluated the performance of each model by observing error, training time, and cross validation learning curves for bias/variance analysis.

Random Search and Optimization Techniques Spring 2017
– Applied four algorithms (randomized hill climbing, simulated annealing, genetic algorithm, and MIMIC) to three problems (max k-coloring, continuous peaks, traveling salesman).
– Applied the algorithms to a neural network optimization problem to determine optimal neural network weights and then compared the performances and training times of these models with those using the standard back-propagation algorithm.

Analyzing Unsupervised Learning Methods for Classification Spring 2017
– Applied six algorithms (K-Means clustering, Expectation Maximization, PCA, ICA, Randomized Projections, and Factor Analysis) to two open source datasets.
– Evaluated the performance of each clustering algorithm by comparing silhouette scores across hyper-parameter values and each dimensionality reduction algorithm by observing various measures like explained variance ratios, kurtosis, and pairwise distance rates.

Applying Knowledge-Based AI to IQ Tests Spring 2016
– Using the PIL image processing library, implemented an AI agent capable of solving 2x2 and 3x3 Raven's Progressive Matrix (RPM) problems.
– My agent used a set of transformation patterns and a "generate and test" technique for calculating confidence scores.

Speech Recognition and Synthesis for Pizza Ordering Service Fall 2011
– Using the Festival speech synthesis framework and a finite state grammar language model, implemented a pizza ordering application which requested pizza details, listened for user input, and repeated that input back to the user.

Activities

Q-Emerge Co-founder and Board Member 2017 – Present
This employee network provides the emerging millennial generation with opportunities to enhance Qualcomm's culture to fit their needs by supporting grass-roots initiatives, providing educational seminars, and producing the Q-Emerge podcast.

GT Tapia Conference Scholarship Recipient Fall 2016
One of 20 OMSCS students to receive a scholarship to attend the 2016 ACM Richard Tapia Celebration of Diversity in Computing.

U2Q Board Member and Marketing Team Member 2013 – 2017
This employee network provides new-grads at Qualcomm with social activities, career development programs, and volunteering opportunities. On the marketing team, I was responsible for ensuring the U2Q brand was true to our mission statement. This involved reviewing emails sent to our mailing list, logo designs, and collaborations with other networks.

Technovation Mentor for High School CS Club 2015
The Technovation challenge is a global entrepreneurship program and competition for young women. As a mentor, I was responsible for providing guidance in app design, programming, and in formulating a business strategy. My team used the AppInventor 2 software developed by MIT to program their app.

Etsy Shop Owner Fall 2017 – Present
Owner/Designer/Maker behind Lotus Knit Shop, an online knitwear and knitting pattern store.