Skanda Koppula

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Massachusetts Institute of Technology

Masters of Engineering, BSc, Computer Systems, MEng GPA: 5.0/5.0 *Sept. 2013 - Expected February 2018*

Relevant courses: Digital Architecture for Deep Learning, Computer Security, Applied Cryptography, Compilers, Operating Systems, Computer Architecture, Computer Networks, Bayesian Inference

Work Experience

Google Search, Research Intern *June 2017 - September 2017*
 – Tested decomposition methods to improve cross-domain adaptability of neural language models (LSTM/RNNs). Designed and demonstrated new method to visualize memory of recurrent neural networks, as applied to character language models. Submitted to 2018 IEEE Conference for Acoustics and Signal Processing.

Square Security, Software Engineering Intern *June 2015 - Aug. 2015*
 – Developed service to collect memory core crashdumps from Square card readers, symbolifing the binary contents to a human-readable source error trace.

Research

MIT Energy Efficient Circuits Group *Sept. 2015 - Present*
 – Developed memory-efficient convolutional neural network for speaker identification. 8x size reduction and 1000x decrease in energy consumption from comparable speaker ID systems.

 – Designed custom hardware for FPGA to evaluate compressed network. Paper submitted to 2018 IEEE Conference for Acoustics and Signal Processing.

Bayesian Inference for Detection of Illness Pre-disposition *May 2013*
 – Applied Bayesian modeling to develop a genomic-environmental factor model to detect patients at-risk or pre-disposed to cancer, schizophrenia, and alcoholism. Published in AMIA 2014: https://www.ncbi.nlm.nih.gov/pubmed/24303313

Projects

MIT Formula SAE Racecar Electronics Team *August 2015 - Present*
 – Designed electronics and wrote firmware for the first open-source automotive battery management system. Orchestrates battery dis/charging state, balancing, safety checks, charging algorithms. https://github.com/MITEVT/ltc-battery-controller

 – Designed and simulated a driverless Formula racecar controller: https://arxiv.org/abs/1708.02215.

Power-Based Side-Channel Attack on ATMega328 *Nov. 2015*
 – Demonstrated extraction of an AES key from an Arduino's flash memory from chip's power traces. Implemented the Correlation Power Analysis attack.

Skills

Embedded Systems: **C**, **x86 Assembly**, **Vivado HLS**, and **Bluespec Verilog**.
Misc: **Python**, **Java**, **Scala**, **shell scripting**, **TensorFlow**
Web Systems: **JAX-RS/Jetty**, **Rails/RSpec**, **Flask**

Awards

Cisco Snort Security Scholarship Recipient	2017
2nd Place North American FSAE Lincoln Electric Racing Competition (Team)	2017
Analog Devices Research and Innovation Scholar Award	2016
Top Research Poster at the 2016 MIT EECSCon Undergraduate Research Conference	2016
Fourth Place in Jane Street Collegiate Programmatic Trading Competition	2015