Charles Topliff

880 N Highland Ave NE Atlanta, GA 30306 | 316-350-4873 | ctopliff0@gatech.edu

Education

Georgia Institute of Technology | Atlanta, GA   *August 2018 – Present*
PhD in Machine Learning | GPA 4.0
Advised by Dr. Morris Cohen, Dr. Mark Davenport

University of Kansas | Wichita, KS   *August 2014 – May 2018*
BS in Electrical Engineering | GPA 3.87

Research Experience

Graduate Research Assistant | Atlanta, GA   *May 2019 - Present*
Advised by Dr. Morris Cohen & Dr. Mark Davenport
• Investigated the use of Long short-term memory networks for a time series prediction problem in forecasting geomagnetic substorms, improving the state of the art for substorm prediction
• Applied canonical time-series methods and low-dimensional embedding techniques for pre-processing of highly non-stationary solar wind data

Graduate Research Assistant | Atlanta, GA   *August 2018 – May 2019*
Advised by Dr. Douglas Williams & Dr. William Melvin
• Implemented value iteration algorithms utilizing fast linear programming optimizers to solve for the optimal decision making policy in high-dimensional scenarios
• Investigated the use of Partially-Observable Markov Decision Processes in adaptive control for radar decision making

Projects

IMDB Semantic Classification   *Spring 2019*
ECE 6254 - Statistical Machine Learning
• Applied recurrent neural networks to the problem of classifying semantics of IMDB movie reviews using tokenized word representation
• Investigated the use of different classical classification models, such as logistic classification and kernelized support vector machines as a baseline comparison

Semidefinite Programming for MAXCUT   *Spring 2019*
ECE 8823 – Convex Optimization
• Reviewed the use of semidefinite programming (SDP) for solving the classic MAXCUT problem, learned about relaxations of quadratically constrained quadratic integer programming problems

Skills

Programming / Software: Java, Python, C++, MATLAB, PBS, Git, VSCode, Git, PBS, Slack
Platforms: Linux (Ubuntu, Slackware, Debian), Red Hat, Performance Computing
Hardware: Raspberry Pi, ARM mbed microcontroller, LaunchPad, FPGAs, oscilloscope, logic analyzer
Professional Organizations: IEEE, HKN

Publications

• C. Topliff, W.M. Melvin, D. Williams "Application of POMDPs to Cognitive Radar" *2019 53rd Asilomar Conference on Signals, Systems, and Computers,* Pacific Grove, CA, USA, 2019, *Accepted*
• J. Kota, C. Topliff, R. Prasanth, G. Ushomirsky and S. Kogon, "Radar Waveform Design Using Lagrangian Dynamics for Co-Channel Interference Mitigation," *2019 IEEE Radar Conference (RadarConf)*, Boston, MA, USA, 2019, pp. 1-5.
• J. Kota, C. Topliff, R. Prasanth, G. Ushomirsky and S. Kogon, "RF Convergent Waveform Design Using Time-Modulated Phase Functions," *2018 52nd Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, USA, 2018, pp. 409-413.