Ian Johnson

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EDUCATION:

Southern Methodist University — Dallas, Texas
Bobby B. Lyle School of Engineering — GPA: 4.00
B.S. Computer Science — Expected Graduation: May 2018
M.S. Computer Science — Expected Graduation: May 2019

TECHNICAL EXPERTISE:

Primary Languages:	C/C++, R, Python
Other Languages:	Java, Elixir, ARM Assembly, Pig, LaTeX, Swift, PHP, Verilog, Objective-C, MatLab
Tools / Environments:	Git, Unix/Linux (Bash), TensorFlow, Hadoop, Hive, MySQL, GCC, GNU Make, Valgrind

RELEVANT COURSES:

Data Mining, Machine Learning, Computer Networks and Distributed Systems, Algorithm Engineering, Data Structures, Assembly Language, Database Concepts

WORK EXPERIENCE:

AT&T Big Data Intern – Data Engineer — 01/2017 – Present

- Designs and implements machine learning models for data insight at AT&T Foundry office using various technologies including Hadoop, Pig, and RCloud
- Performs preprocessing tasks to extract raw data and organize for machine learning / data science tasks

Head Teaching Assistant for SMU C++ and Data Structures Courses — 01/2016 – 12/2016

- Assists in the lab sections for CSE1342 and 2341 at SMU by guiding students with their lab assignments and grading students' lab submissions
- Develops course lab material and manages a course with 7 teaching assistants and 90 students

Freelance Software Development and Tutoring — 08/2014 – Present

- Built an Arduino / Android based anti-texting-and-driving system which detects phone usage by driver and triggers the car alarm on a Ford F-150 using a Bluetooth signal between Android and Arduino and an injected electrical signal on the F-150 entertainment circuit board

RESEARCH EXPERIENCE:

Transaction-Boosted Associative Classification Algorithm — 12/2016 – Present

- Designed a row-weight based associative classification algorithm which uses transaction boosting and weighted ruleset classifiers
- Implemented algorithm in C with R bindings and contributed to the arulesCBA package
- Became major contributor to R package arules by providing heavily optimized C implementations of sparse subset computation

Link Layer Time-Based Authentication Protocol — 10/2016 – Present

- Designed, and is testing and simulating a time-based link-layer authentication protocol for CDMA networks and other non-time division multiplexed networks
- Presented research findings at SMU Lyle Research Days 2016

Wireless Sensor Network Backbone Optimization — 06/2016 – 01/2017

- Implemented linear-time heuristic algorithm for WSN backbone computation which uses a shortest-last vertex ordering-based coloring algorithm and uses high-frequency color pairs to select bipartite subgraphs as backbones
- Tested and validated algorithm performance against a set of 2-and-3 dimensional random sensor distributions, and built rendering system to visualize resulting graphs and backbones

802.11 Network Topology Optimization — 01/2016 – 06/2016

- Designed and implemented wireless LAN modelling environment to render geographic network topologies and calculate interference metrics for given topologies
- Implemented and analyzed performance of various greedy algorithms for topology generation

PROJECT EXPERIENCE:

R Package for Association Rule-Based Classification 03/2016 – Present

- Implemented CBA (Classification Based on Association rules) algorithm (see Liu, et al., 1998) in R with performance critical data structures and algorithms implemented in C
- Packaged algorithm and published alongside a vignette on CRAN (Comprehensive R Archive Network)

Machine Learning and NFL Football Data 07/2016 – 12/2016

- Performed conventional machine learning and data visualization on NFL play-by-play football data from the 2015-2016 season
- Used deep learning framework TensorFlow to build several deep network architectures for predicting what type of play will be run in a certain game scenario

SMS-Based Virtual Unix Shell and Physics Word Problem Solver 10/2014 – 02/2016

- Designed and implemented NLP-based physics word problem solver which can receive problems over SMS, analyze them for provided parameters and queries, and send answers via SMS
- Created an SSH-over-SMS system at HackRice 2016 which allows users to run a virtualized Unix shell over text message and send/receive shell commands and replies using a two-factor authenticated system

AWARDS AND HONORS:

President's Scholar – Southern Methodist University 08/2015 – Present

- Full 4-year academic scholarship awarded to 20 top incoming students based on standardized test scores, high school activities, and interviews

Hamilton Scholar – Southern Methodist University 08/2016 – Present

- Undergraduate research scholarship awarded to top undergraduate researchers in math and science
- Assisting in development of Python package for researching ion bombardment modelling

Tau Beta Pi – Member 01/2017 – Present

- Engineering honor society which honors students who have a strong commitment to academic achievement and personal and professional integrity

Honor Roll with High Distinction 08/2015 – Present

- Maintained position in 5% of students in the engineering school and university-wide based on GPA for every semester at SMU

References available upon request