

Ian Johnson

(303)-815-3710 • www.ianjohnson.com • ianj@smu.edu

19 Sedgwick Drive, CHV, CO, 80113 • github.com/ianjohnson • 3140 Dyer St. #2143, Dallas, TX 75275

EDUCATION: Southern Methodist University President's Scholar 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++, Python, R
Other Languages: Java, Elixir, ARM Assembly, LaTeX, Swift, PHP, HTML/CSS, Objective-C, MatLab
Tools / Environments: Git, Unix/Linux (Bash), Apache, MySQL, GCC, GNU Make, Vim, Valgrind

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

WORK EXPERIENCE:

Head Teaching Assistant for SMU C++ and Data Structures Courses 01/2016 – Present
• 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
Undergraduate Research Assistant for SMU Computer Science Department 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
Private Software Development Consulting 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

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)
Wireless Sensor Network Backbone Optimization Research 06/2016 – Present
• 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
Network Topology Optimization Research 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
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
Autonomous Arduino-Based Robot 08/2015 – 12/2015
• Led multidisciplinary team which designed and built an autonomous mars rover-style robot which one first place in a competition of 16 teams
• Architected and maintained main-control, navigation, and sensor reading libraries for robot