Zain Merchant

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Summary Statement

Seeking to obtain a summer internship with the Federal Bureau of Investigation as a member of the Honors Internship Program for 2017.

Education

Bachelor of Science in Computer Science, The University of Texas at Dallas
Junior, Expected Graduation in May 2018

Employment / Experience

William B. Hanson Center for Space Sciences; Richardson TX
Undergraduate Researcher (May 2016 — Present)
Responsible for developing a beacon satellite receiver to calculate total electron content (TEC) in the ionosphere. Investigated different methods of signal acquisition and built a nested Quadrifilar Helicoidal (QFH) antenna. Also programmed a data recording and satellite tracking software to automate the process. Writing a paper to outline my results and processes for publication.

Robotics and Automation Society at UT Dallas; Richardson, TX
Fundraising Chair (August 2014 — May 2016)
Instructed members in computer programming and Arduino during weekly tutoring sessions. Collaborated with others on projects such as an Intel Edison IoT alarm clock to measure and display metrics obtained through various sensors. Elected to Fundraising Chair in May 2015 to help coordinate fundraising events, sponsorships, and other club activities.

Projects

Autonomous Satellite Tracking and Recording Software in Python — *Summer 2016 (Research Project)*
Forecasted satellite paths using Two Line Element (TLE) sets to expedite the data retrieval process for our antenna. Programmed the Python code to work autonomously alongside the Software Defined Radio platform, GNURadio, to record specific satellite transmissions using an Ettus Research Universal Software Radio Peripheral (USRP).

UNIX Shell Simulator in C++ — *April 2016 (Academic Project)*
Created a UNIX Shell that can parse commands with options, arguments, pipes, and file redirects. Works with multiple inline commands and made without system calls.

Zipf's Law Visualizer in Java — *February 2016 (Independent Project)*
Developed a program to parse through large texts such as books, webpages, and magazines, in order to compute how closely the text follows a Zipfian distribution. Visualized the data computed using Java's Swing GUI toolkit.

Programming Languages / Platforms

Java, C++, Python, MySQL, HTML, CSS, Arduino, and the UNIX Command Line

Relevant Coursework

Algorithm Analysis & Data Structures, Discrete Mathematics I & II, Linear Algebra, Computer Architecture, Digital Logic & Computer Design, Software Engineering, and Organization of Programming Languages

Awards

- 1st Place for Best Microsoft Hack at TAMUHack 2015
- 1st Place for Best Drone Hack (State Farm) at TAMUHack 2015
- 3rd Place at Invitationals and Regionals in Science Olympiad for Astronomy in 2014
- 8th Place at State in Science Olympiad for Astronomy in 2014