Ibrahim Ahmed

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Education

Vanderbilt University, Nashville, TN [Aug '16-May '18]

MS Electrical Engineering

Advanced High Performance Computing, Advanced Real-time Systems, Solid State Physics, Computer Vision, Systems Theory, Design and Analysis of Algorithms.

Vanderbilt University, Nashville, TN [Aug '12-May '16]

BS Electrical Engineering & Physics

Modeling and Simulation, Introductory Applied Machine Learning, Algorithms, High Performance Computing, VLSI Design, Microcontrollers, FPGA Design, Integrated Circuit Fabrication, Galactic and Stellar Astrophysics.

Skills

C/C++ (*PETSc, OpenMP, MPI*), Python (*Numpy, Django*), Go, Java (*Android*), JavaScript (*Angular, jQuery, D3*), HTML/CSS, SQL, Assembly, VHDL, MATLAB/Octave, Cadence, LTSpice, Linux/Bash, PowerShell

Projects

SatTrack

Real-time satellite tracking library. Designed with a Python backend for computing satellite coordinates. Comes with a built-in server for an interactive graphical interface written with D3.js. Communicates with a companion module in Arduino-C to point antenna using servo motors.

imgurPCA

Machine learning library for imgur.com written in Python. Incorporates algorithms for supervised and unsupervised learning based on Principal Component Analysis. Extremely modular and can be sub-classed for multiple data sources.

Gobol

A console based cross-platform chat application written in Go. Implements a custom terminal interface. Compatible with IPv4 and IPv6 addressing.

TIL

Android app that parses reddit.com for interesting facts posted on /r/TodayILearned subreddit. Published to Google Play Store.

Urdown

An online markdown editor with preference for right-to-left languages like Urdu. Can export markdown as PDF, HTML, and raw text. Able to load remote markdown passed as URL parameter for embedding into documents.

Work

Research Assistant, *Vanderbilt University Department of Physics & Astronomy* [Jun '16-Aug '16]

- Studied theories regarding formation and classification of dark matter halos in galaxies.
- Developed algorithms and a multiprocessor compatible library in Python to read simulation data and fit them to ellipsoids to check against λ-Cold Dark Matter (λCDM) models of halo formation.
- Wrote and executed Python scripts to visualize and collect information from 3.7TB of n-body simulation output.

Business Intelligence Intern, *Schneider Electric, Nashville* [Jun '15-Aug '15]

- Wrote SQL procedure to consolidate 40 million high frequency overlapping transaction records into 1.5 million low frequency records with no information loss.
- Rewrote periodic back-up procedures to eliminate redundancies and reduced backup sizes by 75%.
- Designed workflows in Alteryx to process bulk sales data into interactive dashboards for regional managers.

Research Intern, *Institute for Space and Defense Electronics, Nashville* [Jun '14-Aug '14]

- Designed an interface written in VHDL using a DE2 FPGA to test SRAM chips for single event upsets after irradiation.
- Studied existing research and theories on radiation effects on electronics in space.
- Wrote documentation and drew schematics for interface for use by graduate student researchers.