Justin K. Htay

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US Citizen

OBJECTIVE

Electrical engineering and mathematics major with experience at a national research laboratory seeking a DSP internship in Spring/Summer 2019. Strengths include significant experience coding in MATLAB, Python, bash, and C++ as well as a strong math background in DSP techniques. Additional experience in Linux environments and peer leadership as Course Manager for large introductory programming course.

EDUCATION

Georgia Institute of Technology   August 2016 - May 2021

- *Bachelor of Science in Electrical Engineering*   *Atlanta, GA*
  Bachelor of Science in Mathematics   *GPA: 4.00*

EXPERIENCE

- **Georgia Tech Research Institute (GTRI)**   January 2017 - August 2018
  High Performance Computing Co-op, Advanced Concepts Laboratory (ACL)   *Atlanta, GA*

  ○ Applied optimization techniques such as genetic algorithms to design antennas using the FDTD method.
  ○ Designed novel 3D-printed fragmented aperture antennas that achieved similar gain to a canonical helical antenna.
  ○ Implemented a graph theory-based connectivity algorithm in Python to ensure manufacturing feasibility of 3D-printed approach that was significantly faster than previous algorithm.
  ○ Designed FSS for use in novel periodic structures through innovative design process by optimizing individual components of the structure and then combining components and optimizing to reduce coupling effects.
  ○ Created dashboard for displaying ACL achievements and visualizing cluster resource usage that is widely utilized by engineers for status updates and by managers to impress customers.
  ○ Fully installed five major ACL computing resources on the RHEL operating system and solved issues on five others, extensively utilizing Bash scripting and knowledge of Linux as well as problem-solving skills.
  ○ Created Python software to achieve major clustering tasks such as storing old projects and installation of computing resources.

- **Georgia Tech College of Computing**   January 2017 - present
  Teaching Assistant, CS1371 (MATLAB)   *Atlanta, GA*

  ○ Taught 1.5-hour recitations and held 3 hours of office hours weekly for a section of approximately fifty students.
  ○ Repeatedly recognized by fellow TAs for completing questions and for assisting others by covering office hours.
  ○ Wrote 20+ homework problems on a wide range of topics and difficulty for use by over 1000 students each semester.
  ○ Served as Course Manager and Homework Lead for two semesters and was tasked with ensuring smooth operation of the entire course as well as production of homework sets for students.
  ○ Performed major compatibility updates to in-house MATLAB packages essential for operation of the class.

- **National History Bee & Bowl**   May 2015 - present
  Writer   *Tenafly, NJ*

  ○ Wrote 800+ questions with 99% acceptance rate by editors used for history competitions around the globe.
  ○ Completed time-sensitive writing assignments quickly and efficiently.
  ○ Recognized by Director for Question Production for outstanding contributions.
  ○ Wrote 40%+ of a set when other writers were unable to complete their tasks on time.

PROJECTS

- **Efficient Normal Random Number Generation**   June 2018 - August 2018

  ○ Implemented novel rejection-free method for generating normally-distributed random numbers in MATLAB and C

Coursework

- **Circuits Laboratory**: Design and construction of filters and amplifier circuits, use of oscilloscope to verify output of circuits, and modeling of circuits using SPICE software.

- **Microelectronic Circuits**: Introduction to semiconductor physics, design and applications of diodes, BJTs, MOSFETs, and op-amps.

- **Electromagnetics**: Theory and applications of Maxwells equations, properties of waves and transmission lines, introduction to principles of antennas.

- **Signals and Systems**: Applications of signal processing techniques in continuous time, characterization of linear circuits in the Laplace-domain, introduction to stability and PID control.

- **Introduction to Signal Processing**: Introduction to signal processing techniques (convolution, sampling, Fourier series and transform) in discrete time, introduction to digital filters and their implementation in MATLAB.

- **Engineering Software Design**: Introduction to C++ programming and principles of object-oriented design, implementation on mbed platform.

- **Digital Design Laboratory**: Design of logic circuits using graphical CAD, programming in VHDL, circuit implementation on FPGA, project reports and documentation

- **Intro to Probability and Statistics for ECE**: Introduction to probability theory and statistics, random variables, applications to information theory

- **Applied Combinatorics**: Introduction to combinations, recurrence relations, generating functions, posets, graph theory and algorithms, number theory

- **Intro to Number Theory/Cryptography:** : Basic results in number theory such as Euclidean Algorithm, Chinese Remainder Theorem, primitive roots, introduction and implementation of RSA public-key cryptography

Skills

- **Programming**: MATLAB, Python, bash, C, C++, Java, JavaScript

- **Software**: Linux (Ubuntu, RHEL), LaTeX, vim, Altera Quartus II, NI LabVIEW, GitHub, GitLab, LTSPICE, NI Multisim, Mathcad

- **Hardware**: ARM mbed microcontroller, FPGAs, Oscilloscope, Logic analyzer, Function generator

- **Communication**: Design proposals, technical reports, instruction manuals, presentations (large and small audiences)

- **Languages**: English (native), Spanish (beginner)

- **Interests**: Piano (15+ years), Chorus (5+ years)

Leadership/Activities

- **Academic Quizbowl Team**   August 2016 - present
  Treasurer/President   *Atlanta, GA*
  - Raised over $5000 by hosting collegiate tournaments attended by schools around the Southeast.
  - Increased club attendance by 50% and sent teams to multiple tournaments yearly.
  - Organized outreach to local high and middle school quizbowl circuit by having club members volunteer at multiple high school tournaments and allowing top-performing high schools to participate in college tournaments.

- **Office of Minority Educational Development**   June 2018 - August 2018
  Volunteer Teaching Assistant, Challenge Program   *Atlanta, GA*
  - Taught CS concepts to group of 100+ incoming freshmen from underrepresented minorities.
  - Rewrote 20 homework assignments in 2 weeks

Awards, Honors, and Scholarships

- **David L. Smith Scholarship**   November 2017
  - Scholarship awarded by the Georgia Engineering Foundation to a Georgia resident and engineering student.

- **Zell Miller Scholarship**   August 2016
  - Scholarship awarded to high-achieving Georgia high school students for attending a Georgia college.