

Justin K. Htay

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OBJECTIVE

Electrical engineering and mathematics major with experience in national research laboratories seeking a DSP internship in an R&D environment for Summer 2020. Strengths include a strong math background in signal processing and communications techniques, significant experience coding in MATLAB, Python, bash, and C++ as well as work in optimal control and optimization. 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: 3.93

EXPERIENCE

- Sandia National Laboratories** May 2019 - present
R&D Intern, Autonomy for Hypersonics Albuquerque, NM
 - Assisted in preprocessing of images generated by synthetic aperture radar (SAR) for use in automatic target recognition (ATR).
 - Applied optimal control principles to improve Sandia's capability for real-time trajectory generation for hypersonic vehicles and increased output of trajectory simulator by a factor of 100.
 - Supported development of an unmanned aerial system (UAS) designed as a testbed for autonomy algorithms by assisting with layout of electrical components.
- 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 FSS for use in novel periodic structures through innovative design process.
 - Created dashboard for displaying ACL achievements and visualizing cluster resource usage that is widely utilized by engineers for status updates and by managers to display to 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 - May 2019
Teaching Assistant, CS1371 (MATLAB) Atlanta, GA
 - Taught 1.5-hour recitations and held 3 hours of office hours weekly for a section of approximately 50 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 three 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 - July 2018
Writer Tenafly, NJ
 - Wrote 800+ questions with 99% acceptance rate by editors used for history competitions around the globe.
 - Wrote 40%+ of a set on short notice and recognized by the Director for Question Production for outstanding contributions.

PROJECTS

- **Efficient Normal Random Number Generation** June 2018 - May 2019
 - Implemented novel rejection-free method for generating normally-distributed random numbers in MATLAB and C.
 - Optimized to be faster than original ziggurat method for random number generation.
- **3D Printed Fragmented Aperture Antenna** January 2017 - June 2017
 - Designed 3D-printable antenna using GTRI's fragmented approach generalized to 3D space.
 - Implemented a graph theory-based connectivity algorithm in Python to ensure manufacturing feasibility.
 - Wrote a paper being prepared for publication after printed antennas had good measure-model agreement.

COURSEWORK

- **Communication Systems:** Mathematical foundations of communication systems, error probability, modulation schemes, matched filtering, coding and information theory
- **Complex Analysis:** Study of functions in the complex plane, analyticity, power series expansions, Cauchy's integral/residue formulae, conformal mappings
- **Fundamentals of Digital Signal Processing:** Introduction to digital signal processing concepts, such as the Sampling Theorem, DTFT, Z-Transform, DFT, noise, etc. and applications to filter design.
- **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.
- **Graph Theory:** Fundamental results in graph theory, such as circuits, trees, matchings, max-flow min-cut, planarity, colorings, Ramsey theory
- **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.

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, Eagle
- **Hardware:** ARM mbed microcontroller, FPGAs, Oscilloscope, Logic analyzer, Function generator
- **Communication:** Design proposals, technical reports, instruction manuals, presentations (large and small audiences)

LEADERSHIP/ACTIVITIES

- **Academic Quizbowl Team** August 2016 - present
Treasurer/President Atlanta, GA
 - Raised over \$3000 annually 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.
- **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

- **Outstanding ECE Senior Co-op** April 2019
 - Scholarship awarded by the ECE faculty at Georgia Tech to the senior Co-op considered of the highest caliber by his or her employer.
- **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.