MICHAEL TUNG

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EDUCATION

Ph.D. in Electrical and Computer Engineering **May 2030 (Expected)**
Purdue University, West Lafayette, IN

Bachelor of Science in Electrical Engineering, *Summa Cum Laude* **May 2025**
University of Florida, Gainesville, FL GPA: 4.00/4.00

RESEARCH INTEREST

My research focuses on the intersection of information theory, communication systems, and machine learning. I aim to bridge fundamental theory with practical applications, using digital design and embedded systems to solve challenges in scalable and secure real-time technologies.

Key Areas: Communication Systems | Information Theory | Machine Learning | Stochastic Processes | Control Theory | Optimization | Digital Design

RESEARCH EXPERIENCE

Graduate Research Fellow **Aug 2025 – Present**
TSAC Laboratory, Purdue University, West Lafayette, Indiana

- Wireless communication systems and Information Theory, advised by Dr. David J. Love.

Undergraduate Research Assistant **May 2024 – Aug 2025**
Wireless Information Networking Group (WING), University of Florida, Gainesville, FL

- Developed a real-time RF spectrum monitoring application using RFSoC and SDR for the detection and identification of unauthorized drone activity.
- Created a mathematical model and simulation code by collecting and analyzing RF data from diverse scenarios to explain real-world signal behaviors.

NSF REU Fellowship (Paid research assistant) **May 2023 – Aug 2024**
Smart Systems Lab (SSL), University of Florida, Gainesville, FL

- Developed a 3D object tracking camera system using Python and OpenCV within the lab's testing space.
- Enhanced FFmpeg video stream performance by 30% by implementing CUDA hardware acceleration.
- Tested FPGA and microprocessor integration on drones to improve real-time system control.

WORK & PROJECT EXPERIENCE

Capstone Design Project Engineer, Northrop Grumman Sponsored **Aug 2024 – May 2025**
Northrop Grumman, Melbourne, FL

- Awarded **"Best Team"** in the University's **IPPD** program, placing first among all teams for overall project excellence, execution, and presentation.
- Engineered an end-to-end automated asset tracking system for a secure Northrop Grumman lab space, integrating RFID, microcontrollers, and a custom data management framework.

Teaching Assistant, Foundation of DSP & Fund. of EM Fields **Aug 2024 – May 2025**

- Led discussion sections, tutored students, and assisted Dr. Tan Wong with grading homework and exams and applying complex DSP concepts via MATLAB/Python.

- Collaborated with Dr. Vladimir Rakov to manage course materials on Canvas, grade assignments and exams, and assist students with problem-solving in electromagnetics (Maxwell's equations, wave propagation, field analysis).

1-D Time Domain Convolution on FPGA **Nov 2024 - Dec 2024**

- Achieved a **~15x performance speed-up** for 1-D convolution compared to a 667MHz ARM processor by designing a highly parallelized circuit on a Zedboard FPGA.
- Maximized throughput with pipelined and unrolled convolution loops and dual-clock DRAM DMA interface with FIFO and handshake for reliable data transfer and to mitigate **metastability**.
- Optimized memory bandwidth by implementing a smart buffer (sliding window) for efficient data reuse.

Pong Game on FPGA **Apr 2024 – May 2024**

- Developed a Pong game using VHDL with custom logic for game mechanics and VGA output.
- Implemented FSM for game state control and optimized real-time performance.

Circuit Analysis Tool **Apr 2023 – May 2023**

- Developed a C++ tool to calculate currents, voltages, and drops from netlist data.
- Improved efficiency by **20%** with dynamic programming for complex circuits.

SKILLS

Programming Languages: C/C++, Java, Python, MATLAB, Assembly
Hardware Design: VHDL, SystemVerilog, UVM, Vitis HLS
Tools & Software: Git, LTspice, Altium, GNU Radio, TensorFlow, Scikit-learn, Microsoft Office
Certificate: Lean Six Sigma White Belt, NVIDIA Fundamentals of Deep Learning, Building Transformer-Based Natural Language Processing Applications

HONORS & AWARDS

Ross Fellowship **Purdue University, 2025**

- *A competitive, fully funded award for the recruitment of outstanding PhD candidates.*

Presidential Doctoral Excellence Awards **Purdue University, 2025**

- *A multi-year, university-wide fellowship awarded to a select cohort of top incoming PhD candidates based on academic merit and research potential.*

Electric E Award **University of Florida, 2025**

- *The ECE department's most prestigious award.*

Ralph Sias Scholarship **University of Florida, 2024**

- *A merit-based scholarship awarded for outstanding academic achievement in ECE.*

James E. Dykes Scholarship **University of Florida, 2023**

- *A merit-based scholarship awarded for outstanding academic achievement in ECE.*

GRU Brighter Tomorrow Scholarship **Gainesville Regional Utilities, 2021**

- *A competitive, community-based scholarship awarded to promising engineering students for academic merit and leadership potential.*

Honor Roll and Dean's List **University of Florida, 2023 – 2025**