

ROBERT THOMAS LATTUS

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Primary Research Fields: wireless communications & networking, distributed multi-agent cooperation, reinforcement learning

EDUCATION

The University of Florida

Ph.D. - Electrical & Computer Engineering
Track: Signals & Systems
Chair: Dr. John M. Shea
Co-Chair: Dr. Tan F. Wong

2022 - Current

The University of Florida

M.S. - Electrical & Computer Engineering Track: Signals & Systems

2024

Arizona State University

B.S.E. - Electrical Engineering
Summa Cum Laude
Barrett, the Honors College

2022

PEER REVIEWED PUBLICATIONS

Dr. Patricia Solís, Dr. Gautam Dasarathy, Dr. Pavan Turaga, Alexandria Drake, Kevin Jatin Vora, Akarshan Sajja, Ankith Raaman, Dr. Sarbeswar Praharaj & Robert Lattus (2021) Understanding the Spatial Patchwork of Predictive Modeling of First Wave Pandemic Decisions by US Governors. *Cosmopolitan Review*, DOI: 10.1080/09167428.2021.1947120.

COMMITTEES, HONORS, AND AWARDS

Committee Members

2024-2025

Committee Member
Student representative on the Honors & Awards committee in Herbert Wertheim College of Engineering at the University of Florida to review and select winners for the prestigious Faculty Doctoral Mentoring Award.

Dean's Research Award

2022-2026

Dean's Research Award
Awarded by Herbert Wertheim College of Engineering at the University of Florida to incoming domestic PhD students.

Moeur Award

2022

Master's Award Undergraduate award given to students at Arizona State University who complete their degree with a 4.0 GPA or higher after 8 consecutive semesters

President's Award

2018-2022

President's Award

New American University Scholarship from Arizona State University

Dean's List	2018-2022
Achieved Dean's List each semester of Electrical Engineering BSE	
Fulton Undergraduate Research Initiative (FURI)	2019-2020
Awarded \$700 to pursue a research project in the Energy sector and bring findings to FURI Research Symposium	
EPICS Elite Pitch Competition	2019
Placed 3rd in a professional design pitch competition, awarded \$500	
Andy Grove Scholarship Recipient	2019
Competitive scholarship awarded to children of employees of Intel Corporation	

PRESENTATIONS AND INVITED LECTURES

Ph.D. Oral Exam, "Survey on Coordination in Multi-Agent UAV Jamming Scenarios", Herbert Wertheim College of Engineering, University of Florida, August 2024.

Program Review, "Coordination of Distributed Agents through Stochastic Policies in a Cooperative Jamming Scenario", AFOSR Center of Excellence, May 2024.

Research Symposium, "Finding and Predicting Defects in CIGS Cells Using Varied Temperature and Spectroscopy", FURI Symposium, Spring 2020.

Research Symposium, "Finding and Predicting Defects in CIGS Cells Using Varied Temperature and Spectroscopy", FURI Symposium, Fall 2019.

RESEARCH EXPERIENCE

Research Assistant , Wireless Networking Group, The University of Florida Advisor: Dr. John M. Shea	2022-present
<ul style="list-style-type: none"> • Developing software (neural networks, deep learning, Q-learning, policy gradient) and hardware methods in decentralized UAV pursuit and evasion scenarios for tracking and jamming neutralization by employing Artificial Intelligence and optimization techniques • Creating Multi Agent Reinforcement Learning models and techniques to capture uncertainty in decentralized UAV environments and provide optimal policy paths in adversarial and/or stochastic situations • Constructed demonstration at the University of Florida Autonomy Park that used a directional jammer attached to a UAV to jam multiple ground robots communicating over WiFi while monitoring the frequency spectrum in real time • Rigorous antenna perception testing for low-power wireless sensors through lossy mediums 	

Undergraduate Thesis , Barrett, the Honors College–Arizona State University Advisors: Gautam Dasarathy, Visar Berisha	2021
<ul style="list-style-type: none"> • Developed multiple methods in Python to estimate the Bayes Error Rate (BER) on various classification datasets • One method provided increased accuracy of BER estimation at higher sample size, giving implications to the field of Big Data • Presented findings at a thesis defense; passed 	

Undergraduate Researcher, Arizona State University, Tempe, AZ

2020 to 2021

Advisor: Gautam Dasarathy

- Employed Machine Learning in Python to analyze United States COVID-19 mobility data. Connected mobility and case count with policy to discover the effectiveness of policy actions on virus control
 - Investigated the relation of State-to-State COVID-19 spread and mobility within the United States by employing Moran's I Spatial Autocorrelation on case count

Undergraduate Researcher, Arizona State University, Tempe, AZ

2019 to 2020

Advisor: Michael Goryll

- Researched photonics to find and predict defects in CIGS cells using varied temperature and spectroscopy as assistant to Dr. Michael Goryll
 - Designed temperature control software in LabVIEW and LED current controller in Autodesk PCB design software Eagle
 - Presented current findings at the Fall 2019 FURI Symposium as Arizona State University. Project was featured under the “Energy” focus within the Fulton Engineering Schools

TEACHING EXPERIENCE

Arizona State University, Tempe, AZ

January 2021 to May 2021

Undergraduate Teaching Assistant, Ira A. Fulton Schools of Engineering

- Teaching Assistant to Dr. Visar Berisha
 - Assisted with instruction of EEE 203, an undergraduate course with 70 students, covering the following topics: Introduction to Signals and Systems, Fourier Series/Transform, Z-Transform, Sampling, Modulation
 - Hosted review sessions for each exam and final
 - Proctored each exam in coordination with the professor
 - Hosted weekly office hours to aid and advise students

INDUSTRY EXPERIENCE

Schweitzer Engineering Laboratories, Engineering Intern

January 2022-August 2022

- Constructed a settings converter and failure analysis tool for motor protection relays
 - Programmed protection schemes onto relays and performed FAT for customers

Intel Corporation, EMC Engineering Intern,

May 2021-August 2021

- Designed a rapid magnetic field mapper by using the built-in magnetometer within a phone
 - Presented findings and results to multiple teams with significant positive feedback

Intel Corporation, EMC Engineering Intern,

June 2020-August 2020

- Built a Graphical User Interface in Python with functionality to both automate a Spectrum Analyzer and provide real time data analysis and visualization
 - Presented a design review to non-technical customers in Ireland who were able to employ it with ease for their own measurements and data analysis

EXTRACURRICULAR PROJECTS

Applied Engineering Design Project – Research Chair, Hardware Developer

EPICS at Arizona State University, Tempe, AZ, 2019-2021

- Designed prototype braille schematic on breadboard with LEDs to allow visually impaired users to navigate the internet
- Presented and facilitated design review presentations to technology corporate partners
- Collaborated with international community partners on feedback, product improvement, and design validation
- Won over \$500 in total funding for project through design pitches to professional engineers
- Recognized project at the Fall 2019 IEEE Symposium at ASU
- Project news publication: <https://news.asu.edu/20190516-epics-elite-pitch-competition-expands-impact-student-projects>

RELEVANT PROJECTS

Computer Communications, The University of Florida

- Designed performance evaluation on four communication protocols in a linear network topology using software defined networking (Mininet)
 - Evaluation included rigorous testing of IP, TCP, UDP, HTTP
 - Metrics included Packet Loss, Transferred Bytes, Jitter, Transmission Delay, Throughput, and Latency

DSP with Software Defined Radios, The University of Florida

- Designed a full duplex wireless communication system between two radios that sent a full error free message using ARQ protocol
- Design tools included C++, multithreaded computing, and various signal processing/wireless communication techniques
 - Acquisition, timing, modulation, filtering, correlation

Fundamentals of Machine Learning, The University of Florida

Performed linear regression on medical datasets to find optimal hyperparameters

- Built K-Means and EM algorithms to optimize a clustering dataset
- Performed extensive preprocessing on handwritten equation symbol data and applied Naïve Bayes Model and Convolutional Neural Network (CNN) to identify symbols
- Built autoencoder neural network to evaluate MNIST data

Foundations of DSP, The University of Florida

- Designed multiple signal processing functions in MATLAB
 - Filtering and Windowing
 - Upsampling and Downsampling Audio
 - Correlation to Find Unique Signals

Senior Design, Arizona State University

- Built a personal fitbit by concatenating pulse oximeter, heartrate monitor, watch and straps by using a Raspberry Pi

Real-Time DSP, Arizona State University

- Constructed a tune using an STM board, C, assembly, and MATLAB by processing individual note frequencies
- Performed image processing on personal photos by manipulating pixels in various mathematical techniques

PROFESSIONAL CLUBS AND AFFILIATIONS

Engineering Graduate Student Council

2022-present

- Secretary (05/2023-05/2024)**

- Responsible for documenting meeting and funds transfer for organization
- Works closely with college representatives in recruiting to host events for prospective students

Fulton Ambassadors

2018-2022

- Paraprofessional student leader, giving tours and information sessions to prospective students
- **Tour Director (04/2019-04/2020)**

- Coordinated and organized all recruitment tours for ASU Fulton Schools of Engineering
- Collaborated closely with department leadership to design more personalized tour experiences for prospective students

COMMUNITY SERVICE

Antioch Community Church

LifeGroup Leader, Chandler, Arizona, 2019-2021

LANGUAGES

English: Native Language

French: Novice Listener, Novice Speaker, Intermediate Reading and Writing

Spanish: Novice Listener, Novice Speaker

COMPUTER SKILLS

Artificial Intelligence: Reinforcement Learning, Deep Reinforcement Learning, Neural Networks

Programming: Python, Java, C++, MATLAB, Linux

Applications: Intel Quartus Prime, LTSpice, Cadence Virtuoso, LabVIEW

Platforms: Microsoft Office Suite, Google Suite

REFERENCES

Dr. John M. Shea, Professor
Herbert Wertheim College of Engineering
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Dr. Tan F. Wong, Professor
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Dr. Gautam Dasarathy, Assistant Professor
Ira A. Fulton Schools of Engineering
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