ROBERT THOMAS LATTUS

rthomaslattus@gmail.com | github.com/robertlattus | Citizenship: United States of America

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

EDUCATION

The University of Florida
Ph.D. - Electrical & Computer Engineering — 2022 - Current
Track: Signals & Systems
Chair: Dr. John M. Shea
Co-Chair: Dr. Tan F. Wong

The University of Florida
M.S. - Electrical & Computer Engineering — 2024
Track: Signals & Systems

Arizona State University
B.S.E. - Electrical Engineering — 2022
Summa Cum Laude
Barrett, the Honors College

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. *Geographical Review*, DOI: 10.1080/00167428.2021.1947139

COMMITTEES, HONORS, AND AWARDS

Committee Member — 2024, 2025
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 Metnoring Award

Dean's Research Award — 2022-2026
Awarded by Herbert Wertheim College of Engineering at the University of Florida to incoming domestic PhD students

Moeur Award — 2022
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
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 2022-present
Advisor: Dr. John M. Shea

- 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 2021
Advisors: Gautam Dasarathy, Visar Berisha

- 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 effectivity 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

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
University of Florida
P.O. Box 116130,
Gainesville, FL 32611
jshea@ece.ufl.edu

Dr. Tan F. Wong, Professor
Herbert Wertheim College of Engineering
University of Florida
P.O. Box 116130,
Gainesville, FL 32611
twong@ece.ufl.edu

Dr. Gautam Dasarathy, Assistant Professor
Ira A. Fulton Schools of Engineering
Arizona State University
Goldwater Center 324
650 E Tyler Mall
Tempe, Arizona 85281
gautamd@asu.edu