

MATT G. WEIN

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LICENSURE

Board of Professional Engineers, *Florida License: 110021216*

2017

EDUCATION

<u>University of Florida</u> – Ph.D. Cybernetics & Artificial Intelligence	<u>Expected 2025</u>
<u>University of Florida</u> – M.Eng. Electrical & Computer Engineering	2023
<u>University of Florida</u> – Machine Learning (ECE) Certified	2022
<u>Virginia Tech</u> – Graduate Credits, Naval Engineering, Systems Design	2019
<u>University of Florida</u> – B.S. Civil & Coastal Engineering - Cum Laude	2017
<u>Moscow State University</u> – Russian Language Certification	2015

Proficiencies: ASM, C/C+, VHDL, Java, Perl, Python, Fortran, MATLAB, Linux, DSP, Signals & Systems, Comms, Microprocessors, FPGA, Machine Learning, Digital Logic, AutoCAD, SolidWorks, RISA3D, Cost Analysis, IEEE, AISC

RESEARCH EXPERIENCE

GatorSense Lab | Graduate Research Assistant | UNIVERSITY OF FLORIDA Jan 2022 – May 2023

Advisor: Dr. Alina Zare

Research Area: AI, Remote Sensing, Image Processing

Implemented advanced machine learning techniques using data acquired through remotely sensed imagery (hyperspectral/LiDAR) from satellites, airplanes, and drones to understand forests at scales from individual trees to entire continents. Under the guidance of Dr. Alina Zare, work on the Macrosystems NEON Project:

- Produced improved spatially explicit data on species and traits for ~50 million individual trees.
- Disentangled the importance of processes driving species distribution, abundance and biodiversity scales.
- Developed cross-scale models of tree structural traits and allometry that incorporate environmental variation and biological interactions to inform biomass estimation

SmartDATA Lab | Graduate Student Researcher | UNIVERSITY OF FLORIDA Jan 2022 – May 2022

Advisor: Dr. Joel Harley

Research Area: DSP, Machine Learning, Medical Imaging

Developed machine learning algorithm to enhance existing NDT sonar fault detection devices used for inspection of CF composite air foils. Ultimately ensuring structural integrity and extend service lifespan of US Airforce & Naval air fleets by allowing deformations to be more efficiently and accurately mapped.

SmartSystems Lab | Graduate Research Assistant | UNIVERSITY OF FLORIDA Jan 2022 – May 2022

Advisor: Dr. Christophe Bobda

Research Area: Computer Vision, Multitask Learning

Environmental awareness and object identification for autonomous robots, enabling completion of physical tasks using servo operated arms. Focus on optimization of physical local limitations or "no-go" zone identification, object identification, and kinematic calculations for interaction with the physical environment. Expansion of environmental mapping and data analysis for movement and object interactions were also priorities. Machine learning implementations, ROS, C++, kinematic power consumption evaluations were all required to further the goal of enabling the robot to more efficiently complete simple tasks.

PUBLICATIONS

1. **Data science competition for cross-site delineation and classification of individual trees from airborne remote sensing data.**

S. Graves, S. Marconi, D. Stewart, I. Harmon, B. G. Weinstein, Y. Kanazawa, V. M Scholl, M. B. Joseph, J. McClinchy, L. Browne, M. K. Sullivan, S. Estrada-Villegas, E. Tusa, D. Zhe Wang, A. Singh S. A. Bohlman, **M. Wein**, A. Zare, E. P. White
bioRxiv, 2022

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RELATIVE EMPLOYMENT

*Contact information available upon request

Software Engineer | L3HARRIS TECHNOLOGIES | Melbourne, FL

May 2022 – August 2022

May 2023 – August 2023

Space & Airborne Systems division; developed hardware/software interfacing and evaluated overall system operational performances. Served on the IPT Processor team, debugging hardware modules for the new F-35 TRC ICP processors; involved with troubleshooting issues involving hardware and software testing. IRAD development of automated target recognition computer vision using artificially generated SAR and EO data.

Graduate Teaching Assistant | UNIVERSITY OF FLORIDA | Gainesville, FL

May 2021 – Sept 2021

Instructed alongside Dr. Eric M. Schwartz in his Microprocessor Applications course. Proctored labs, practical examinations, conducted office hours weekly and graded student submissions. Topics covered included program structures, assembly and C programming for memory-mapped peripherals including UART, DMA, AD/DA converters and interrupt controllers.

Federal Emergency Response Official | DEMSI (SERCO)/FEMA | N/A

Nov 2019 – Present

- Conducted site inspections, identified and assessed, validated infrastructure damage; evaluated scopes
- Reviewed and analyzed professional architectural/engineering reports, designs and as-built plans.
- Validated applicant-provided scopes of work, including related code and standard requirements.
- Advised FEMA staff on the technical validity of claims presented under FEMA's arbitration process. Occasionally testified as an expert witness on FEMA's behalf
- Responsible for design, development, implementation, and analysis of technical products and systems. Performed engineering design evaluations.
- Developed a range of products and their respective cost estimates. Recommended alterations to development and design to improve quality of products and procedures.

Project Engineer, Manager | JOHNSON BROS CORP | Daytona Beach, FL

Sept 2018 – Sept 2019

FDOT Project – Veterans Memorial Bridge; Monitored progress, production, schedule deviations and variances and developed alternate methods for corrective action by studying project plan and specifications, calculating time requirements, updating schedule and sequencing project elements for constructability. Prepared CIOWs, project status and schedule progress report documents by collecting, analyzing, and summarizing information and trends; developing trending charts, schedule analysis and integrated project plans regularly, determining actions for field teams. Reviewed project specifications by studying product design, customer requirements, and performance standards. Controlled project costs and monitored budget by developing budgeting and cost projections, also coordinating with vendors for material needs. Performed structural, geotechnical monitoring, material and project plan compliance as required by contract documents. Assessed impacts to critical path and near-critical activities. Verified schedule integrity and evaluated logic/float paths. Supervised operations in field.

Structural Engineer | SOUTHLAND HOLDINGS, JOHNSON BROS | Orlando, FL

Aug 2017 – Sept 2018

Construction engineering design contractor for heavy civil and marine projects. Design procurement includes hydro facilities, suspension, segmental, bascule, swing and lift span bridges, power plant infrastructure, cofferdams, retaining walls, crane rigging, picking beams and pick analysis. Submit plans to US Army Corp for approval. Ensure compliance with AISC, ASTM, DOT, USACE EM-385, and OSHA standards. Provide means and methods for field. Meet with partnering companies to optimize erection, demo, materials development and application on jobs. Currently participating in design build and other various project delivery methods.

Project Highlights:

Central Business District Bridges, Birmingham AL
Bascule Bridge over Lake Worth Lagoon, Pam Beach FL
Veterans Memorial Bridge, Daytona FL
Kentucky Lock & Dam, Grand Rivers KY
SELA 26 Levee, New Orleans LA
Lewis & Clark Bridge, Williston ND
Capers Ridge Pump Station, Houston TX
Courtney Campbell Causeway, Clearwater FL

Certifications:

OSHA 10
OSHA 30
First Responder CPR/AED/First Aid
Primavera P6 Professional Management
Concrete Field Technician Level 1 & 2
Stormwater & Erosion Inspector
Transportation Construction Inspector
CTQP Inspection

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Geotechnical Engineer | FROEHLING & ROBERTSON | Washington D.C.

June 2017 – Aug 2017

Construction material testing and geosstructural monitoring. Coordinated testing for projects, oversaw CMT equipment maintenance and calibration for annual review by Cement & Concrete Reference Laboratory (CCRL). Conducted data analysis, managed project scheduling, visited sites for internal review and record.

Project Highlights:

Walter Reed Army Medical Center, Bethesda MD
Ronald Reagan Airport, Washington DC
US Naval Research Laboratory, Chesapeake Bay MD
Naval Surface Weapons Center, Dahlgren VA

Certifications:

CMT Specialist
APNGA Portable Nuclear Gauge Safety
Nuclear Gauge Safety & Transportation
HAZMAT Safety

Project Manager | ADVANCE TESTING | West Point, NY

Jul 2014 – Dec 2014

Performed onsite material inspection of concrete, steel and nuclear density gauge testing of HMA. Registered with ACI, AGC, ASC, HAZMAT, NRC, NYDOT. Security clearance, entrusted access to radioactive materials, devices, equipment and company vehicles for site travel. Delivered samples to DOT materials lab; performed QCQA inspections on site and in house. Determined level of quality and respective bid bonus percent for contractors upon completion. DOT 50, 60, 70, & 80 series roadways on HMA. On duty 70-100hrs per week.

Project Highlights:

Michie Stadium, West Point Military Academy NY
New Tappan Zee Bridge, Tarrytown NY
Orange Regional Medical Center, Middletown NY
Taconic State Parkway, Hopewell Junction NY

Certifications:

AASHTO Level 1
ACI Concrete Field Technician Grade I
Associated General Contractors of NYS
NYSHMA Density Testing Inspector

Designer & Distributor | SOCIAL LIGHT INC. | Vero Beach, FL

Oct 2004 – Dec 2013

Handled communications, container shipments, order processing. Analyzed warranty requests. Tended verification and renewal of shipping certifications according to national and international legislature, aided preliminary purchase drafts and educated new clientele on proper filling techniques and product maintenance. Served as logistics coordinator, QCQA tech, and pyro-technician, ensured DOT, Federal Bureau of Explosives and HAZMAT standards. Oversaw QC of lighters, butane, accessories, and respective packaging.

Technical Involvement:

- Visited factory owners and engineers on business trips to Shenzhen, Suzhou, and Wenzhou in China to improve functionality as well as design new models and inspection methods for upcoming seasons.
- Represented company at *AmericasMart Trade Center* (Atlanta, GA). Largest international permanent trade center for wholesale in the US. Clients included: HSN, Neiman Marcus, Overstock, Zippo

RECENT VOLUNTEER SERVICE

ASCE - Make-A-Wish Star Wars Half Marathon	Orlando, FL
ASCE - Toys for Tots Collection	Orlando, FL
ASCE - November Food Drive Social	Orlando, FL
ASCE Share-A-Meal at Ronald McDonald House	Orlando, FL
SAR EL, VFI - Israeli Defense Forces	Tsipori, Israel
UF Hillel & St Francis House	Gainesville, FL
Academic Treks Cultural Immersion	Guadeloupe, Dept. of France
Ashwood Grove Polo & Equine Rehabilitation	Vero Beach, FL
Habitat for Humanity	Melbourne, FL
SpringFest - Case Western Reserve	Cleveland, OH
Ducks Unlimited	Donor
The Battle Buddy Foundation	Donor

HONORS & SOCIETIES

Magna Cum Laude & Consecutive Deans List
ACI, AKC, ASCE, IEEE, FES, MENSA, NFGSPC, NSBE,
NSF, NASAR, NAPSG, OSHA, SARCF, SWUSAR, USAR
Ashwood Grove Polo & Goldstar Hungarian Vizslas
UFIC Ambassador for Russia

50th Anniversary ΣAM – Mu Gamma Scholarship
Project Beyond Alumni & Birthright Participant
Founder, President of DIY Engineers at UF
Theatre – ASM, Light/soundboard, Set design
VFI Scholarship Recipient & VFI Ambassador

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FIELD INTERESTS

cybernetics & artificial intelligence
neural interfacing
neural networks & deep learning
digital and RF communication
cryptography/encryption
hyperspectral imagery
cyber-physical systems & security
autonomous maritime navigation
biometric verification technology
pattern recognition & intelligence
computer vision & image processing
microprocessors/microcontrollers in avionics
biomedical engineering
formula racing
quantum computing
high-speed transport
weaponry defense systems
big data analytics, IoT
sensor and weapons systems
orbital mechanics, EM propulsion
government infrastructure, security systems
machine learning time series, stochastics

drone & sonar applications in structural analysis
robotics, big data, computational photography
dead reconning, submarine system design
geothermal, deep earth digs & tunnel boring
erosion prevention, retaining walls & biofilms
organic explosives & polymer materials
optimization, structural rehabilitation
BIM, 3D modeling & drone multipoint surveying
SAR GIS & emergency transport systems
foreign services, search & rescue
Russian/American economic relations
cold weather construction methods
cost analysis & public private partnerships
green engr vertical farming & crop propagation
sustainability & emission regulation
reinforced concrete, advance steel design
offshore drilling, fracking, oil refineries
petroleum engineering, sand dredging
molten salt fueled nuclear reactors
marine diesel, ocean city ports
water treatment & waste management
desalination & water retention systems



LINKEDIN



PORTFOLIO



GITHUB



GOOGLE SCHOLAR