

Education

B.S. Optics & Photonics, *University of Central Florida*

2026 Grad | Orlando, FL

- Interest/focus in Optical MEMS, metamaterials, and metasurfaces.
- In my fourth year, planning on a Masters in material science.

AP Scholar Grad, *Suncoast Polytechnical Highschool*

2021 | Sarasota, FL

Technical School, engineering program, robotics, CAD, etc...

Precision Machining, *Suncoast Technical College*

2021 | Sarasota, FL

CAM, Hand Mill/Lathes, Haas CNC Mill/Lathes, & Welding. + Robotic Automation of Hass Mills.

Advanced Manufacturing, *Suncoast Technical College*

2020 | Sarasota, FL

3D modeling and various additive/subtractive manufacturing methods: 3D printing (SLA/FDM), Plasma Cutting, Basic Lathe Skills, & Welding.

Experience & Organizations

Volunteer Engineering Instructor, *Discovery Middle School*

2024 - present | Orlando, FL

Teaching 7th to 8th grade level students general CAD usage and design principles.

Research Assistant, *Dr. Jaesung Lee*

2024 - present | Orlando, FL

- Head of CAD & manufacturing for lab projects: custom vacuum chamber, optical kinematic systems, mounting for microscopy, etc...
- Demonstrated cleanroom procedures & machines: spin coaters, direct write lasers (DWL) wet etching, cleaning of wafers, & principles of gowning.
- Designed semiconductor manufacturing protocol for Silicon Nitride membranes.

Camp Director, *University of Central Florida*

2024 - present | Orlando, FL

- Teaching optical principles at a high school level with an emphasis on hands-on experience.
- Designed custom projects for students to learn concepts at a reduced cost, such as a camera lucida or \$10 newtonian telescope project.

Contractor, *Roots Engineering Services*

2021 - 2024 | Mixed Mode

- Designed, manufactured, and assembled robotic systems.
- Developed curriculum materials to bridge the professional to student gap.
- Created marketing and pre-vis material for robotic systems to aid in design and sales. ex. 1.3 million dollar semiconductor manufacturing simulator.

Job Shadow, NASA

2024 | Kennedy Space Center

- Toured pad 39B, VAB, and launch control– learning about fuel & safety infrastructure, rocket assembly, and launch criteria.
- Visited the Prototype Development laboratory, and learned about the various manufacturing processes used in iterative deign: mills, 3D printers, waterjets, wire EDM, orbital welding, etc...
- Visited the Cryogenic Test Laboratory, learning about liquid rocket fuel containment, and the challenges of vacuum and temperature control.

Job Shadow, Consolidated Electrical Distributors

2024 | Orlando, FL

Learned about commercial & residential electrical equipment, inside/outside sales, manufacturer-distributor relations, and warehouse picking/logistics.

Certified Technician, Valvoline

2023 - 2024 | Oviedo, FL

- Managed customer sentiment and presented services and discounts to encourage sales.
- Performed services: oil changes, transmission, differential, fuel system, etc...
- Consistently achieved or surpassed sales goals.

Drone Pilot, University of Miami

2019 | Peru

Drone survey & videography of Rio Chillon for torrent duck and habitat research.

Lifetime Member, Suncoast Science Center

2016 - 2021 | Sarasota, FL

- Recieved Lifetime Membership award upon leaving the program.
- Senior Committee member leading fellow team members in the design, build, and management of the annual RC Car Race.
- Taught workshops and classes to contestents and volunteers alike on STEM skills and using lab machinery.

 Skills

3D CAD/CAM

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Solidworks, Onshape, & Fusion 360 (+CAM)

Lasercutting

● ● ● ● ●

Trotec Speedy M400, MC-1325, Epilog-3536, and various others.

Vector Design

● ● ● ● ●

Coreldraw & Inkscape

3D Rendering

● ● ● ● ○

Blender & Solidworks Visualize

CNC Mill

● ● ● ● ○

Haas VF2 & TM1, +CAM

3D Printing

● ● ● ● ○

Strasys F170, Form 2/3, Taz 5, Makerbot Sketch, Bambu X1C, etc... + tolerances

Basic Shop Machinery

Bandsaw, table saw, belt sander, drill press, hand tools, etc...



LaTeX

Documentation, article formatting, formula sheets, etc...



Hand Lathe/Mill

Feed and speed calculation, marking and centering, & general usage.



Notable Certificates

- SolidWorks CSWA Academic
- SolidWorks CSWP Professional
- NIMS CNC Mill Operations
- MATLAB Onramp
- UCF EHS: Lab, Laser, Radiation, & X-ray.

Publications

[1] McCracken, K. G., Alza, L. A., McCracken, K. G., and Smith, M. M. (2012). Parasitism and joint incubation of upland goose (*Chloephaga picta*) nest by yellow-billed pintail (*Anas georgica*). *Ornitología Neotropical*, 23(2):287–290.

Professional Projects

Linear Circuits Formula Sheets 2023 - 2024

Comprehensive formula sheet for Linear Circuits I & II, using LaTeX.

Robotic Surgery Training system 2022 - 2023

Rendering & initial design of mock remote surgery system, for elementary level robotics education.

Semiconductor Manufacturing Training System 2021 - 2023

Rendering, CAD, and design work for a collegiate level robotic training system in simulated semiconductor manufacturing.

Medallion Factory Training System 2021 - 2023

Rendering, CAD, and design work for a collegiate level robotic factory training system.

Tradeshow Marketing Animation 2022

A video compilation of existing ROOTS systems, for a tradeshow/future marketing needs.

Robotic Medical Training System 2022 - 2024

A render for the proposal an elementary/middle school level robotic training system, the premise: robotic surgery.

Logistic Learning Factory 2022 - 2023

A render for the proposal of a collegiate level robotic training system package, that replicated a factory logistic layout of incoming boxes, AMRs, and robotic gantries.

UCF Great Naval Orange Race 2022

A GPS navigation based boat design, and an accompanying publication style research paper for the UCF annual Great Naval Orange Race.

Manatee County Build & Install 2021

The build, and install of a elementary level robotic training system.

SkillsUSA Welded Sculpture 2020

A welded butterfly and flower, made out of plasma cut steel. Won 2nd place in Regionals.

Rio Chillon Torrent Duck Project 2019

Drone Piloting, videoing, and survey of the Chillón River in Peru.

MicroTorr Vacuum Chamber 2024

Custom chamber designed for CNC machining, with support for microscope & electrical feedthroughs.

Automated Lens Parameter System 2025 - present

Developing budget high power Xenon source, imaging system, & codebase to generate lens datasheet ex situ.

For a full list of projects check out my website!