Carson Sobolewski

⌗ github.com/csobolew | in linkedin.com/in/csobolew | ✉ csobolewski@ufl.edu

EDUCATION

Bachelor of Science in Computer Engineering   Spring 2025
University of Florida   *Current GPA: 4.0/4.0*

Awards: ECE Undergraduate Research Excellence Award, AI Scholars Program, University Honors Program, University Scholars Program, National Merit Scholarship, Benacquisto Scholarship, Helen E. Khouri Memorial Scholarship (2022, 2023), Wentworth Honors Study Abroad Scholarship (Japan), National Rural and Small-town Scholar, Bright Futures Scholarship, Dean's List (Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024)

Service Organizations: Eta Kappa Nu (HKN), Tau Beta Pi (TBP)

RESEARCH

Uncertainty Quantification for Object Detection Transformers (DETRs) | *MIT Azizan Lab*   In Progress
- Designing image-level and object-level uncertainty quantification metrics that eliminate the overconfidence often observed in softmax confidence scores
- Utilizing logit values and intermediate trends to observe model convergence and analyze model confidence

Pipeline for Automated PCB Reverse Engineering | *Florida Institute for National Security (FINS)*   In Progress
- Designed a Python pipeline for the creation of PCB design files from images of physical boards obtained through X-ray computed tomography (CT) scans
- Used computer vision strategies to automatically determine the locations of vias and traces and use their coordinates to reconstruct them in KiCad

Calibrated Safety Chances for Image-Based Autonomy | *Trustworthy Engineered Autonomy (TEA) Lab*   L4DC 2024
- Created robust evaluators for determining the safety of vehicles in top-down images, removing unnecessary information and combating distribution shift caused by inverted and hallucinated images
- Converted existing CNN controllers from TensorFlow to PyTorch, adapting them to fit our existing codebase
- Assisted with the writing, review, and submission of an academic paper to L4DC: https://arxiv.org/abs/2308.12252
- Mentored a team of three undergraduate students in the construction of F1TENTH vehicles and design of autonomous control algorithms

PROJECTS

Mario Kart Reinforcement Learning   Fall 2023
- Implemented a custom environment for the training of a state of the art PPO (proximal policy optimization) reinforcement learning network using 8 parallel agents to complete races in Mario Kart Wii, significantly reducing training times compared to other solutions
- Developed a multiprocessing pipeline to efficiently transfer reward, position, and speed data between game memory and 17 running Python scripts 250+ times per second

EXPERIENCE

Treasurer | *Eta Kappa Nu (HKN) Epsilon Sigma*   Summer 2024 - Present
- Serve on the executive board of IEEE's honor society, managing finances and creating fundraising opportunities

Peer Advisor and Ambassador | *UF Center for Undergraduate Research*   Fall 2023 - Present
- Provide guidance to undergraduate students on how to find research opportunities and interact with faculty

Industry Chair | *Eta Kappa Nu (HKN) Epsilon Sigma*   Spring 2024
- Interacted with various companies in electrical and computer engineering to plan and execute info sessions and events

Undergraduate Teaching Assistant | *Microprocessor Applications*   Spring 2023
- Assisted with teaching 90 students the characteristics and capabilities of microprocessors in assembly and C

Firmware and Electrical System Engineer | *Gator Motorsports*   Fall 2022
- Developed firmware for a Formula SAE car's custom VCU using a Raspberry Pi and the Zephyr real-time operating system