Joseph Telaak

https://linkedin.com/in/jtelaak/

Email : jtelaak@sc.edu
Mobile : 704-351-7396

Education

- **University of South Carolina (USC)** — Columbia, SC
  BSE in Computer Engineering (Major GPA: 3.95); — *Aug. 2022 – May 2025 (Exp)*
  BS in Mathematics (Major GPA: 4.0);
- **South Carolina Governor's School for Science and Mathematics (SCGSSM)** — Hartsville, SC
  High School Diploma, Concentration in CS and Math; — *Aug. 2020 - May 2022*

Experience

- **USC SyReX Lab** — Columbia, SC
  Undergraduate Research Assistant — *Feb. 2023 - Present*
  - Building and training a model to predict ECG signal based on mmWave reflections.
  - Designing a new data capture board to replace the current one by TI using an FPGA.
  - Created a dataset to train a model to classify pedestrians and cars with mmWave radar.
  - Developed a demonstration system to compare vitals measured by a radar to those measured by a smartwatch.
  - Designed a system to combine multiple mmWave radars in an larger array structure.
- **SCGSSM** — Hartsville, SC
  Instructor — *Winter 2023*
  - Guest instructor under Dr. Elaine Parshall for the January Interim.
  - Taught embedded systems and electronics engineering concepts.
  - Developed course for permanent offering in the regular course-catalog.
- **SCGSSM Autonomous Golf Cart Research** — Hartsville, SC
  Founder and Team Lead — *Jan. 2022 - Feb. 2023*
  - Managed funding (Over $50k), part procurement, and technical design.
  - Designed custom circuit boards to retrofit drive-by-wire control system for multiple models of golf carts.
  - Wrote software to help the vehicle to avoid collisions, navigate autonomously, and allow teleoperated control.
- **USC Cyberinfrastructure Lab** — Columbia, SC
  Research Assistant — *Summer 2021*
  - Created scripts to automate throughput and packet loss measurements.
  - Developed applications for P4 programmable data-plane switches.

Volunteering

- **SCGSSM Board of Directors** — Hartsville, SC
  Alumni Association Board Member — *Jul. 2023 - Present*
- **FIRST Robotics** — Columbia, SC
  Alumni Association Board Member, Various Volunteer Roles — *Jan. 2022 - Present*
  - Leveraged several years of FIRST experience to mentor top-ranking teams in SC.
  - Volunteered as Judge and Robot Inspector.

Selected Projects

- **Self-Driving Golf Cart**: Retrofited a golf cart with an Advanced Driver Assistance System with custom electronics, LiDAR, and ZED stereo cameras. Custom NVIDIA Jetson TX2 carrier board with analog to CSI video capture and integrated network switch.
- **Open-Source Rocket Flight Computer**: Rocket flight computer with GPS, IMU, barometer, and LoRA telemetry.
- **RISC-V CPU with GPIO**: Designed a RISC-CPU with parallelization hazard detection, memory-mapped GPIO/UART.

Other

- **Languages**: C/C++, Python, Java, MATLAB, P4, SQL, MIPS, x86, VHDL
- **Technologies**: mmWave Studio, ROS, RTOS, Quartus, FPGA, STM32, Altium, RISC-V, RF Design, Signal Processing
- **Memberships**: IEEE Eta Kappa Nu, IEEE MTTS, ACM, AIAA