

# Joseph Telaak

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## EDUCATION

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

## EXPERIENCE

- USC SyReX Lab** Columbia, SC  
Feb. 2023 - Present
  - Undergraduate Research Assistant
  - 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  
Winter 2023
  - Instructor
    - 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  
Jan. 2022 - Feb. 2023
  - Founder and Team Lead
    - 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  
Summer 2021
  - Research Assistant
    - Created scripts to automate throughput and packet loss measurements.
    - Developed applications for P4 programmable data-plane switches.

## VOLUNTEERING

- SCGSSM Board of Directors** Hartsville, SC  
Jul. 2023 - Present
  - Alumni Association Board Member
- FIRST Robotics** Columbia, SC  
Jan. 2022 - Present
  - Alumni Association Board Member, Various Volunteer Roles
    - 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:** Retrofitted 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.
- 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, Quartus, FPGA, STM32, Altium, RISC-V, Signal Processing
- Memberships:** IEEE Eta Kappa Nu, IEEE MTTTS, ACM, AIAA