Joseph Telaak

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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.
- **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
- **Memberships**: IEEE Eta Kappa Nu, IEEE MTTS, ACM, AIAA