Joseph Telaak

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EDUCATION

University of South Carolina (USC) — Columbia, SC
BSE in Computer Engineering, Leadership Distinction in Research (GPA: 3.58); — *Aug. 2022 – Dec. 2024*

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

Telaak Automation — Myrtle Beach, SC
Founder — *May 2024 - Present*
- Installed Control4 custom integration and home automation systems.
- Indentified industry gaps a developed advanced IO controllers for environmental control and security.
- Developed drivers for integration with existing systems and custom hardware.

Stanford Linear Accelerator Center (SLAC) — Menlo Park, CA
Intern — *Summer 2024*
- Updated HPC infrastructure by installing new compute and storage servers.
- Created a ollama chatbot trained on internal confluence documentation for training and support.

USC SyReX Lab — Columbia, SC
Undergraduate Research Assistant — *Feb. 2023 - Present*
- Built an ML model for contactless prediction of ECG and vitals using mmWave radar.
- Trained an ML model to generate CV-like 3D bounding boxes without a camera using mmWave radar. MobiSys
- Designed a system to combine multiple mmWave radars in an larger array structure to increase resolution.

SCGSSM Autonomous Golf Cart Research — Hartsville, SC
Founder, Part-time consultant — *Jan. 2022 - Feb. 2023, Jan. 2024 - Present*
- Created a course for students and served as an ongoing mentor/guest instructor.
- Managed funding (Over $50k) during the initial phase. Later a dedicated builing was constructed
- Converted standard golf carts to autonomous campus fleet transportation.

USC Cyberinfrastructure Lab — Columbia, SC
Research Assistant — *Summer 2021*
- Automated throughput and packet loss measurements.
- Developed a on-switch network load balancer in P4.

VOLUNTEERING

SCGSSM Board of Directors — Hartsville, SC
Alumni Association Board Member — *Jul. 2023 - Present*

FIRST Robotics — Columbia, SC
FIRST Technical Advisor — *Jan. 2022 - Present*

SELECTED OTHER PROJECTS

- **Self-Driving Golf Cart**: Designed vendor-independent ADAS system for golf carts. Custom Nvidia Jetson carrier with MIPI analog video capture. Custom PCBs for vehicle integration. CV for obstacle avoidance, sign recognition, and lane following.
- **Rocket Flight Computer**: Arduino flight computer with GPS, IMU, barometer, and LoRA telemetry on custom PCB.
- **RISC-V CPU**: Designed a custom multicore RISC-V CPU with IO and matrix coprocessor for an Altera FPGA.
- **Pick-n-place machine**: Built a machine for automated PCB assembly using Marlin and OpenPNP.

OTHER

- **Languages**: C/C++, Python, Java, MATLAB, Rust, LUA, P4, Verilog, SQL, MIPS, x86 Assembly

- **Technologies**: mmWave Studio, ROS, RTOS, Quartus, Kubernetes, STM32 Cube, Altium, RF Design, Signal Processing, AutoCAD, 3D Printing

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