

# Joseph Telaak

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## EDUCATION

- **University of South Carolina (USC)** Columbia, SC  
*BSE in Computer Engineering, Leadership Distinction in Research (Major GPA: 3.88)* 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

- **Parkeze** Columbia, SC  
*Project Manager - Sensing Solutions* Dec. 2024 - Present
  - Directed development of ultra low-power parking occupancy sensors and authored technical documentation.
  - Created custom PCBs for sensors and a LoRa-to-cellular gateway for network integration.
  - Optimized sensor firmware for minimal power consumption and extended battery life.
  - Designed geospatial database queries to enable real-time parking search.
- **USC Systems Research on X Lab** Columbia, SC  
*Research Assistant* Feb. 2023 - Dec. 2024
  - Co-authored research on generating camera-like 3D bounding boxes exclusively using mmWave radar.
  - Developed and showcased a live demonstration for measuring vital signs without physical contact.
  - Engineered a system to integrate multiple standalone mmWave radars into an array structure.
  - Built ground truth data collection setups supporting multiple projects.
- **SCGSSM Autonomous Golf Cart** Hartsville, SC  
*Founder, Part-Time Consultant/Instructor* Jan. 2022 - Feb. 2023, Jan. 2024 - May 2024
  - Devised a vendor-independent method to convert golf carts into ADAS-enabled vehicles.
  - Designed a custom Nvidia Jetson board with analog-to-digital video capture.
  - Implemented computer vision to enable obstacle avoidance, sign recognition, and lane following.
- **USC Cyberinfrastructure Lab** Columbia, SC  
*Research Assistant* Summer 2021
  - Automated equipment configuration, throughput testing, and packet loss measurements in networks.
  - Created an on-switch webserver load balancer in P4.

## LEADERSHIP

- **SCGSSM Board of Directors** Hartsville, SC  
*Alumni Association Engagement Committee Member* Jul. 2023 - Present
- **FIRST Robotics** Columbia, SC  
*FIRST Technical Advisor, Judge, Robot Inspector* Jan. 2022 - Present

## SELECTED PROJECTS

- **RISC-V CPU:** Implemented a multicore RISC-V CPU with custom matrix instructions and dedicated peripherals for PWM, SPI, and I2C on an FPGA.
- **Rocket Flight Computer:** Arduino flight computer with GPS, IMU, barometer, and LoRA telemetry on custom PCB.
- **Pick-n-Place Machine:** Designed an automated PCB assembler with a custom Marlin board and OpenPNP.

## SKILLS

- **Languages:** : C/C++, Python, Java, MATLAB, Rust, LUA, P4, Verilog, SQL, MIPS, x86 Assembly
- **Programs:** : mmWave Studio, Quartus, STM32 Cube, Altium, KiCad
- **Technologies:** : ROS, RTOS, Kubernetes, Docker
- **Memberships:** : IEEE Eta Kappa Nu (HKN), IEEE MTTs, IEEE, ACM, AIAA