Utkarsh Gupta

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Embedded Software Engineer with over 3 years of experience specializing in the design, development, and debugging of embedded systems. Proficient in C/C++, with hands-on experience in managing software for System-on-Chips (SoCs). Demonstrated knowledge in hardware, peripherals, and real-time operating systems.

Programming Skills

- **Scripting Languages**: Python, C++, C
- **Platform**: Azure IoT, Visual Studio, GDB, VIM
- **SCM tools**: Perforce, Git, SVN
- **Peripherals**: CAN, ISOBUS, UART, SPI, I2C, GPIO

Experience

- **Tapfin-Qualcomm(Collabera)** San Diego, CA
  SW Engineer *March 2022 - Current*
  - **System on Chip(SoC) Software delivery**: Efficiently managed software delivery through build failure investigation, component dev teams collaboration, and the orchestration of CI/CD integration, leveraging Perforce for version control.
  - **5g o-ran SoC Deployment**: Engaged in 5G o-RAN distributed Unit SoC & their peripherals system setup integration & testing
  - **axiom deployment**: Facilitated & scripted automated testing deployment through proficient use of Python, Scons, ADB, Linux commands, continuous integration through GitLab.
  - **tools proficiency**: Utilized various tools such as Wireshark, CAPLR (network packet sniffer), Signal Analyzer
- **ARi** Peoria, IL
  Embedded System Engineer ll *June 2021 - March 2022*
  - **virtual terminal**: Modified existing and added more functionality on user interface of virtual terminal, gain exposure to ISOBUS protocol, language used C. Wrote test scripts using Python to perform GNSS application level testing on terminal devices.
  - **ecu controller**: Contributed to the development of low light feature in the ECU, gain exposure to CAN protocol
  - **code collaborator**: Participated in code reviews and documented changes made to the codebase.
- **IsmileTechnologies** Bolingbrook, IL
  IoT Engineer Intern *Sep 2020 - Dec 2020*
  - **IoT**: As an intern, contributed significantly to the development of complex hardware projects, including the 'Covid Analyzer'. Gained hands-on experience in coding with peripherals like i2c and GPIO, and utilized Azure cloud services for IoT control. Applied Python and Node.js for backend development and executed Linux scripting for enhanced system operations.
- **Hyperloop pod** Chicago, IL
  Volunteer *Jan 2020 - May 2021*
  - **Pod Real Time Control**: Served as an integral member of the Electronics and Control team, tasked with managing the operation of BLDC motors through hardware interfaces such as Jetson TX2 and Raspberry Pi. Developed a robust backend in Python and successfully implemented peripherals like GPIO and i2c for effective communication and control. Utilized telemetry and IMU devices for real-time data acquisition and control operations, further enhancing the overall system efficiency.
- **TCS** Nagpur IN
  System Engineer *Jan 2017 - Apr 2018*
  - **Hardware In Loop Testing**: Contributed to the development of an automated testing framework for desktop software using Python,C++ macros, and CAPL. Wrote and maintained custom scripts that improved system efficiency and reduced performance time by 50%.
  - **ADAS ECU Testing Bench**: Performed failsafe testing on ECUs for a Japanese automotive major company. Gained exposure to HIL testing tools such as CANoe, CANape, and Dspace System. Simulated various real-world scenarios and validated the functionality of the ECUs in a controlled and safe environment.

Relevant Projects

- **Automated Vehicle System-Level Simulation and Testing Environment::Aug 2023 Project**: Designed and implemented a system-level vehicle simulation environment, using Python to simulate complex behavior modeling. Created virtual Battery Management System (BMS) and actuators for real-world mimicry, and C/C++ firmware for imitating an actual vehicle's firmware responses. Built a user friendly dashboard for real-time data display.
- **EasyNN library for Academic project**: Developed EasyNN library with Neural Network algorithm and its applications in python & created C++ interoperation tool with Numpy arrays, designed to support matrices/tensors.
- **Smart Plug Simulator**: Contributed to the development of a smart hub dashboard for an academic project focused on IoT, utilizing a full-stack web application. Collaborated with a team to develop the dashboard's features, including grouping and controlling IoT devices through a Restful API. Utilized skills in C++ and JavaScript to develop an backend. Designed and implemented an IoT simulator to communicate with the IoT hub using open protocols such as HTTPS and MQTT, ensuring seamless integration and functionality.
- **Virtual Quadcopter using Gazebo & ROS**: Simulation platform: Gazebo, Virtual quadcopter simulation, Sensor & flight dynamics integration, IMU readings & GPS coordinates

Education

- **Illinois Institute of Technology** Chicago, IL
  Master of Science in Computer Engineering; GPA: 3.44 *Aug. 2019 – May. 2021*
  Related Course: Object oriented programming & Machine learning, Application-Software Design, Computer Vision, Hybrid electric vehicle drive
- **Oriental Institute of Science and Technology** Bhopal, India
  Bachelor of Engineering in Electrical and Computer Engineering; GPA: 7.89/10.0 *Aug.2012 – May. 2016*