

GALIB ALLAHMA RAID

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SUMMARY

Embedded systems engineer specializing in real-time firmware, ARM microcontrollers, and hardware-software integration. Experienced in autonomous robotics and low-latency audio DSP systems.

TECHNICAL SKILLS

Embedded & Firmware: Bare-metal ARM (STM32, TM4C), FreeRTOS, Interrupts, Memory, DSP

Languages: C, C++, Python, Bash, ARM Assembly, Java

Interfaces & Peripherals: SPI, I2C, UART, PWM, ADC/DAC, GPIO

Debugging & Tools: Oscilloscope, Logic Analyzer, GDB, Git, CMake, Linux CLI

Robotics & Systems: ROS2, motor control, GPS/IMU/LiDAR, navigation algorithms

Hardware & Digital: PCB debugging, signal integrity, Verilog, Quartus

EDUCATION

B.S. Computer Engineering, University of Texas at Arlington - *May 2026*

Awards: Freshman Distinction Roll, Maverick Academic Scholarship

PROJECTS

Autonomous Ground Robot (IGVC) – Real-Time Guidance & Control | ROS2, C++, Embedded Sensors

- Integrated GPS, IMU, and LiDAR with real-time motor control to enable autonomous outdoor navigation on an IGVC robot
- Debugged timing, sensor fusion, and firmware–ROS2 communication issues to improve navigation accuracy and system stability

Real-Time Operating System | ARM Cortex-M4, C

- Designed and implemented a preemptive RTOS with priority scheduling, mutexes, and semaphores on ARM Cortex-M4F
- Added memory protection and a shell-based task interface to enable deterministic execution and modular control

Multi-Effect Guitar Processor | STM32, PCB, DSP

- Designed a real-time audio processing pipeline on STM32 with ADC/DAC streaming over I2S, achieving continuous low-latency signal flow and optimized DSP execution for sub-20 ms processing
- Building and validating a custom PCB with analog front-end filtering, confirming signal integrity and timing performance through oscilloscope and logic analyzer testing

Embedded LCR Meter | TM4C123, ADC, Bare-Metal C

- Achieved 95.6% measurement accuracy as validated with oscilloscope and multimeter testing by implementing ADC-based signal capture, UART visualization, and real-time calibration on a custom PCB

EXPERIENCE

Research Assistant

Jan. 2023 – Mar. 2023

University of Texas at Arlington Research Institute

- Contributed to an R&D modeling effort by developing multi-fidelity neural networks that achieved over 92% predictive accuracy and reduced dependence on high-cost simulations by 60%

Event Operations Leader

October 2022 – Present

UC Operations (UTA)

- Led a 15-person AV/VC team across 100+ high-profile events, coordinating with clients and executives to resolve real-time technical issues under tight deadlines and shifting logistics