Junaid Jawed Khan

Mechatronic Systems Engineering Student

Education

Jan 2017 - Sep 2021

Bachelor of Applied Sciences | Simon Fraser University

- Mechatronic Systems Engineering

Work Experience

Jan 2020 - Sep 2020

Tantalus Systems

RF Physical Layer Development Engineer Co-op

- Developed RISC based code to interact with the next generation 220MHz transceiver.
- Researched and implemented a high-data-rate symbol determination technique, to improve receiver sensitivity; this involved a range of design work from proof of concept using C to final implementation in RISC assembly.
- Comprehensively documented general platform observations and relevant test results on an online shared workspace.

Technical Experience

Jan 2019 - present

Firmware Developement

Team Phantom - SFU Formula SAE Electric

- Developed drivers for the SPI communication between Battery Management System and the Thermistor Expansion Board, to monitor the temperature of the battery cells and send shut down signal to the Vehicle Control Unit incase of overheating.
- Developed drivers for the CAN communication between the 3 nodes of the car, namely Hercules Safety MCUs TMS570LS1227, TMS570LS1224 and Tiva C series TM4C123GH6PM.
- Wrote drivers for TMS570LS1227 FEE Module to periodically store the state of the Vehicle Control Unit in the EEPROM memory, which allowed the team to monitor and debug behavior of the subsystems of the EV.

Nov 2019 - Jan 2020

Firmware Developement

SFU Rocketry

- Developed drivers for Adafruit GPS and established UART communication interface between the GPS and TM4C123GH6PM, to keep track of the rocket.
- Developed drivers for the SPI communication between the rocket's on-board computer and Adesto external flash, to send information from the rocket to a ground station, with a RF system.

May 2019 - Aug 2019

Lead-Lag Compensator Design

Control System Design

- Modelled and simulated open-loop & closed-loop step response of a RLC circuit in MATLAB & LTSpice.
- Modelled and simulated step response of a RLC circuit with a PID controller in LTSpice.
- Implementated a Lead-lag compensator for a RLC circuit using Bode and Nyquist plots for the open-loop system.

May 2019 - Aug 2019

System Design

Modelling & Simulation

- Designed and simulated a renewable energy system in MATLAB that utilizes energy generated in a gym to power a washing machine and a dryer.
- Designed a chassis for an electric-cycle and simulated stress & fatigue failure analysis using SolidWorks.

Contact Information

E-mail

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Engineering Skills

Experienced with embedded firmware developement language - C, C++, RISC Assembly

Experienced with microcontrollers - TM4C, TMS570LS, STM32F4

Familiar with firmware debugging tools - J-Link, scopes, logic analyzers

Familiar with concurrent programming - FreeRTOS

Familiar with implementing communication protocols - SPI, UART, I2C

Familiar with simulation & analysis tools - MATLAB, SolidWorks, LTSpice

Experienced with version control tools - Github, Gitlab

Familiar with Digital Signal Theory and DSPs

Soft Skills

Able to work independently

Strong team player

Able to troubleshoot problems

Excellent Communication skills

Interests

Billiards

Basketball

Embedded Systems

Internet Of Things

Awards and Recognitions

Jun 2016

Honors Roll Award | Fraser International College, Burnaby BC