Faheem Dustin Quazi

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Education

Ph.D. Electrical Engineering
The University of Houston, Houston, TX — Est: Spring 2027
- Research Assistant - Machine Learning/Digital Twins applications in spaceflight communication.

M.S. Electrical Engineering - Communication and Networking
The University of Houston, Houston, TX — Fall 2024
- Undergraduate Teaching Assistant - Advanced Microprocessor Systems (Fall 2022 - Spring 2023).

B.S. Computer Engineering - Embedded Systems — High Honors
The University of Houston, Houston, TX — May 2022
- Team Lead - Senior Design: NASA BASSS Spacecraft Audio-over-TTE Development.

Experience

Flight Software and Systems Co-op — Fall 2024
NASA Johnson Space Center - Houston, TX — Division: EV3 / EG6
Developing flight software for pose estimation model inferencing on CubeSat platform.

Computer Vision and Embedded Systems Co-op — Summer 2024
NASA Johnson Space Center - Houston, TX — Division: EV3
Investigated object recognition ML inferencing on RISC-V path-to-flight processors.
Established RISC-V cross-compile toolchain for ONNX Runtime on PolarFire SoC platforms.
Benchmark CPU performance of YOLO models on PolarFire SoC with various optimization techniques.
Establish initial pipeline for VectorBLOX FPGA CNN Accelerator integration with toolchain-generated Linux images.

Spacesuit Informatics Development Co-op (Navigation and Computer Vision) — Spring/Summer 2023
NASA Johnson Space Center - Houston, TX — Division: EV3
Developed Registered AR capabilities targeting Artemis Lunar EVA platform (Joint AR).
- Lead navigation integration sub-team - develop interfaces/standards for interfacing with localization solutions.
- Developed localization solution via Differential GPS/IMU and integrated with external waveguide display software.
- Investigated ARuco (CV) marker tracking capability for constrained graphics platform on spacesuit.

Spacesuit Informatics Development Co-op (Computer Vision) — Summer 2022
NASA Johnson Space Center - Houston, TX — Division: EV3
Established Concept of Operations and Prototypes for Lunar CV applications on constrained hardware platforms.
- Prototyped proof of concept CV pipeline running on FPGA - spacesuit processor (Xilinx MPSoC).
- Authored concept of operations for applications of computer vision on lunar EVAs.
- Developed software for and supported overall integration of Joint AR project hardware and software.

Aircraft Operations Engineering Co-op — Summer 2021
NASA Johnson Space Center - Houston, TX — Division: CC3
Contributed to Gulfstream aircraft payload integration and support hardware development.
- Improved ARINC 429 to UDP service to allow for multiple endpoints.
- Developed preflight tool to automate performance calculations for T-38.
- Supported mentor with various design challenges for customer payload integration.

Spacesuit Informatics Development Co-op — Summer 2020
NASA Johnson Space Center - Houston, TX — Division: EV3
Developed Embedded Software and VR Environments for Spacesuit Heads-In-Display Prototype (Joint AR).
- Developed Virtual Reality Lunar Testbed for rapid prototyping of Heads-In Display concepts.
- Developed realtime streaming capability for Unreal Engine to support VR Testbed environment.
- Wrote firmware and device drivers to provide control and telemetry to spacesuit AR informatics systems.

Avionics Integration SEPP Intern — Summer 2019
Collins Aerospace - Cedar Rapids, IA — Division: HBS
Integrated commercial avionics software platform with off-the-shelf flight simulator.
- Connected X-Plane 11 datastream to Collins Fusion Display Platform software rehost.
- Integrated Collins software rehosted displays into X-Plane 3D cockpit.
- Platforms: King Air 350, Bombardier Challenger 350.

Flight Software Development Co-op — Spring 2019
NASA Johnson Space Center - Houston, TX — Division: ER6
Developed processes/systems for Augmented Reality Electronic Procedures for use in space environments.
- Created AR Procedures and virtual mirror (suit viewer) prototype for HAL EVA Prep and Post tasks.
- Modified and 3D-Printed UIA Panel for use in SUITS competition and development.
- Updated Lunar Rover Unreal Engine demo for Comicpalooza 2019.

Environment Effects Engineering Software Development Intern — Summer/Fall 2018
Rockwell Collins - Cedar Rapids, IA — Division: EEE
Developed new web-based lab management tool to improve logistical support and streamline lab efficiency.
- Worked with engineers and technicians across multiple disciplines to build requirements set.
- Maintained functionality of old tools while improving user experience.
- Supported rollout to production floor while back at school (Fall 2018).

Flight Operations (CRONUS - Communications and Data Handling) Co-op — Spring 2018
NASA Johnson Space Center - Houston, TX — Division: CI23
Developed and refactored new tools for flight controllers in Mission Control.
- Developed new tool "BreakTime" to assist flight controllers in finding time to take a break.
- Refactored outdated tools to support updated mission operations requirements.
- Provided time-critical updates and telemetry computation scripts for C2V2 Transceiver Displays.

Human Interfaces Intern — Spring/Fall 2017
NASA Johnson Space Center - Houston, TX — Division: EV3
Enhanced Web Display Framework for spaceflight based on HTML5, CSS3, and JavaScript.
- Developed Web Display Framework to unify common components of displays.
- Improved Display Widget Framework by removing external dependencies and streamlining overall lifecycle.
- Developed What-You-See-Is-What-You-Get tool (Chisel) in HTML5 to streamline display creation process.
- Developed hardware emulator that simulates spaceflight system data (CCSDS) to test displays.

Systems Engineering and Integration Intern — Summer 2016
NASA Johnson Space Center - Houston, TX — Division: EA53
Built various LabVIEW-based utilities to increase fidelity of simulations for hardware testing.
- Developed Modular Subsystem Emulation Platform (MSEP): drives power systems via PLBs during testing.
- Developed Configuration System for MSEP, to simplify defining how a system "acts" and its look/feel.

Technical Skills

Software
C (Embedded Applications)
Python
ML Toolchains (ONNX / PyTorch)
Git / Subversion (Agile)
Assembly (ARM/Thumb)
Linux Toolchains (Buildroot)
MATLAB
MySQL / MS-SQL
Java

Hardware
TI Platforms (MSP430 / TM4C / TI RTOS)
Arduino / Processing
Xilinx MPSoC (Vivado HLS / Verilog)
Microchip PFSoC (Libero / Verilog)
NI LabVIEW + cRIO Platform
CAD (AutoDesk Inventor / Fusion 360)
3D Printing
Circuit Design (Eagle / Fritzing)

Awards

Software Initial Award
NASA Johnson Space Center
November 4, 2019
For contributing to the development of scientific or technical software, which has been approved for release by NASA: Chisel [MSC-26457-1].

Internship Honorable Mention
NASA Johnson Space Center
Spring 2017
In recognition of outstanding performance and lasting contributions as a Spring 2017 Intern at NASA Johnson Space Center.

Best Final Class Project: 1st Place
Circuit Theory I: University of Houston
Fall 2016
Digital MP3 Player with Analog Equalizer

Certifications

LabVIEW Associate Developer (CLAD)
National Instruments
January 2018
S/N: 100-317-23335

References

Paromita Mitra
NASA Johnson Space Center
paromita.mitra@nasa.gov

Matthew Noyes
NASA Johnson Space Center
matthew.noyes@nasa.gov

Kyle Setrum
Rockwell Collins
kyle.setrum@collins.com

See More

LinkedIn
https://www.linkedin.com/in/faheemquazi/

Personal Website
http://quazi.me

I try to keep this updated with my latest projects, and host a live version of this resume there!

- Improved CCSDS Telemetry Generation Library for LabVIEW (Spacecraft Data Packet).

Extracurricular

Commercial SEL/Glider Pilot 2019 - Present

Instrument (Sept 2020), Remote Pilot/sUAS (Dec 2020), Comm-SEL (Aug 2021), Comm-Glider (Sept 2021)

- Currently working on Powered and Glider CFI.
- Introductory Pilot Volunteer for Greater Houston Soaring Association.
- Endorsements: Complex (June 2019), Tailwheel (Nov 2020), High Performance (Jan 2021).

Ham Radio Operator 2024 - Present

W5FDQ - General Class (2024)