Jordan Melnychuk

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WORK EXPERIENCE

Fisker| Chicago, IL (Remote)

Senior Software Engineer (February 2021 – Present)

- Write C++ for embedded telematics ECU to handle remote function calls
- Write embedded diagnostics stack (ISO 14229) for over the air (OTA) updates and remote diagnostics
- Develop of CAN messages and signals for ECU communication on Fisker Ocean
- Work with component suppliers to ensure they meet technical requirements, quality, and timing
- Instrument test vehicles to enable remote CAN collection and software testing
- Develop feature and technical requirements for: telematics, CAN gateway, steering wheel, body controller, touchscreen switches, rotating infotainment display, power lift gate, occupancy detection mats, and seat position/heat controllers

Hendrickson| Woodridge, IL

Embedded Engineer (November 2019 – January 2021)

- Develop firmware for advanced tire pressure monitor sensors (TPMS) on TI CC2652 (ARM Cortex M4)
  - Firmware written in a mix of C and C++
  - Uses POSIX threads on top of TI-RTOS
- Integrate OpenThread (IOT mesh framework) on embedded boards to communicate with CAN gateway module
- Developed NFC driver to allow secure phone based commissioning of OpenThread network and setting calibrations using NDEF format
- Wrote drivers for power controlling, temperature, pressure sensors, and 3 axis accelerometer
- Implemented algorithm to determine abnormal tire rotation and alignment
- Created REST CoAP endpoints to read from sensors
- Developed GraphQL server to link TPMS configurations from Postgres database and handle CoAP messages
- Developed admin dashboard for sensor networks in React
- Designed power electronic circuitry to charge super capacitor from 3 phase motor

General Motors | Milford, MI

Software Engineer (July 2019 – October 2019)

- Developed reusable CAN and LIN firmware on PowerPC for use on GM electronic control units (ECUs) enabling communication between ECUs, sensors, actuators, and diagnostic/emission tools
- Part of rearchitecting effort to make CAN/LIN software more standards compliant (AUTOSAR) which enables better interoperability with “off the shelf” supplier software
- Part of initiative to restructure legacy code to allow better testing and easier debugging

Software Engineer (January 2017 – July 2019)

- Developed distributed testing framework to resource share hardware in the loop (HIL) vehicle simulators
  - Designed a test dashboard in ReactJS to allow users to view and run tests from their browser
  - Created GraphQL endpoints to allow clients to remotely control HILs and calibrate ECUs
  - Demonstrated viability of creating distributed “virtual integration benches” by connecting and streaming CAN data over IP between HILs on campus LAN
  - Developed multitasking system to pause and bump lower priority jobs that previously would take weeks to run on a dedicated HIL allowing for more efficient resource use
- Created Python libraries to facilitate ECU testing and calibration for other groups
  - Read/write static variables on ECUs over Ethernet (XCP)
  - A2L parser (PLY) to read and decode ECU memory addresses and partitions for XCP, CAN, and SREC
  - Low level communication to read memory and run diagnostic routines over CAN (GMLAN/UDS)
  - SREC binary decoder to read and translate calibrations (static variables) between software releases
  - Wrappers for proprietary debugging scripting language (Lauterbach PRACTICE)

    - High level abstractions for libraries to allow script reuse independent of input (CAN, XCP, Lauterbach, SREC, stubbed values) and outputs (HIL, emulators, vehicle)
    - Automated previously manual integration and regression tests to validate ECU software and supplier firmware (Python)

Integration Engineer (January 2016 – January 2017)

- Root cause and resolve software issues related to gas ECUs
- Support calibrators on gas trucks, SUVs, and performance cars (ATS, CTS, Camaro, and CT6)
- Travel to manufacturing plants to determine and resolve causes of diagnostic codes
- Perform analytics on large CAN data logs to find issues and report statistics (Python/Pandas)

Union Pacific | Omaha, NE

Intern Software Engineer (May 2015 – July 2015)

- Implemented low cost VoIP PBX to service IP phones using FreePBX
- Created system manager to authenticate Ethernet phones connected to LAN and monitor call routing
- Created deployment tool to remotely update phone firmware and settings with phone data stored in SQL

Schlumberger | Sugarland, TX

Intern Electrical Engineer (May 2014 – November 2014)

- Developed testing electronics for validating wireline tools at end of manufacturing
- Designed 4 layer PCBs to mount device under test (DUT), host test electronics, and interface to PCs
- Designed FPGA firmware (C and VHDL) and Windows C drivers to implement Schlumberger proprietary serial protocol to enable communication between test PCs and wireline tools

Intern Electrical Engineer (May 2013 – August 2013)

- Designed hardware using FPGAs, DC/DC converters, Power Over Ethernet (POE), OLED display, and voltage/current sensors for wireline diagnostic tools
- Wrote embedded drivers for FPGA (C and VHDL) to control OLED display and monitor tool power over SPI

Undergrad Research Team | Atlanta, GA

- Created MATLAB scripts to extract information from microscope video of microparticle movement
- Scripts determined number of particles in frame, direction, and speed of particles
- Used statistical analysis to see if particles were moving due to chemical gradients or randomly

EDUCATION

Georgia Institute of Technology [Georgia Tech]
M.S. Electrical Engineering (2015)
GPA: 3.75
Focus on RF and electronics

Georgia Institute of Technology
B.S. Electrical Engineering (2015)
GPA: 3.69
Graduated with Highest Honors

EXPERIENCE

Software: Python, C, C++, CMake, Typescript, HTML, CSS, Linux, TI-RTOS, POSIX threads
Libraries/Frameworks: OpenThread, Numpy, Pandas, Django, Graphql, React, Git, Docker
Hardware: RF/Analog/Digital Electronics, PCB Layout, FPGAs, VHDL
Communication Protocols: SPI, I2C, RS232, NFC, CAN, CAN-FD, LIN, UDS, CAN-TP, XCP
Standards: ISO 3779/3790 (VIN), ISO 15765 (CAN-TP), ISO 14229 (Unified Diagnostics), ASAM XCP (ECU Calibration), ASAM MCD-2 (ECU Memory Decoder)
Automotive Tools: ETAS INCA, Vehicle Spy
Certification: Design for Six Sigma