Shangjie (Henry) Zheng

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EDUCATION

Southern Methodist University (SMU) ····· May 2024
Master of Science in Computer Science GPA: 3.97/4.00

University of Missouri-Kansas City (UMKC) ····· May 2021
Bachelor of Science in Mechanical Engineering GPA: 3.52/4.00

PROFESSIONAL EXPERIENCE

Lion Energy LLC. ····· Dec. 2024 – Present
Control Systems Engineer | Embedded C, Python, MATLAB, Simulink, Simscape, CAN, I2C, UART American Fork, UT

- Researched and optimized embedded software for Energy Management System (EMS) and Battery Management System (BMS).
- Collaboratively engineered and implemented EMS Interface Control Module (ICM), integrating inter-controller communication protocols (CAN, UART, I2C etc.) to enable seamless coordination among DC/DC, BMS, inverters, and extension battery packs.
- Oversaw the complete software lifecycle for ICM, ensuring stable data transmission, scalability and robust system functionality.
- Refined and enhanced existing BMS control system software, conducting cell characterization test to develop an improved state-space model of the battery pack in MATLAB Simulink. Programmatically process test data using Python to support model analysis.
- Collaborated closely with Validation Engineers to define and execute testing procedures, ensuring system performance.

Lion Energy LLC. ····· Jul 2024 – Dec. 2024
Software Intern, Control Systems | Embedded C, MATLAB, Simulink, MCU, CAN American Fork, UT

- Collaborated in the development and research of embedded software for Battery Management System (BMS).
- Reviewed and evaluated the existing BMS firmware program in C and Simulink model, refining algorithms for cell balancing, SoC and SoH estimation. Resolved software defects identified during the process, enhancing system functionality and accuracy.
- Developed and implemented robust control algorithm for the BMS fault detection layer, safeguarding reliable signal processing and validation against hardware thresholds, achieving significant improvements in the HAL's reliability.
- Led embedded BMS software/model validation, creating automated test cases for the Controller Area Network (CAN) conforming J1939 standard using CANalyzer, J-Link debugger, ensuring BMS configurability and communication integrity.

Southern Methodist University ····· Aug 2023 - Present
Graduate Research Assistant | Python, GPT, Gemini, Keras, spaCy Dallas, TX

- Developed and refined a machine learning toolset aiming to translate tax domain-specific knowledge into code-like representations using LLMs and machine learning techniques, enabling more efficient automation and decision-making.
- Fine-tuning GPT and Gemini LLMs with pre-annotated tax documents by classifying contexts into (non-)environmental variables, leveraging Keras, spaCy libraries to develop a specialized classifier that accurately interprets domain-specific language.
- Implemented programs to automate the data collection and sanitization, populate datasets, and validate raw internet data sources.
- Advancing model development to accurately translate natural language into logical form through ongoing optimization efforts.

SELECTED PROJECTS

TA Management System ····· Fall 2023
Southern Methodist University | TypeScript, React, Node.js, MySQL, Jest, GitHub Dallas, TX

- Developed a dynamic full-stack TA Management System for the Engineering school at SMU to support 1,000+ potential users.
- Implemented a reactive web front-end using React, integrated with TS-based Node.js back-end, and MySQL database system.
- Managed Git version control, ensured program met coding standards, co-reviewed PRs and merged approved submissions.
- Drove development in a Scrum team, overseeing development cycle from requirements analysis to application deployment.

Quadcopter Control System ····· Fall 2020
University of Missouri-Kansas City | Python, Auto pHAT, Raspberry Pi Kansas City, MO

- Designed and assessed multi-input, multi-output feedback control system, ensuring dynamic responsiveness.
- Integrated measurement data into software-based embedded system, implementing PID controller algorithm.
- Programmed Raspberry Pi and Auto pHAT to control quadcopter, enabling precise roll/pitch actions via remote input.

PROFESSIONAL SKILLS

- **Programming Languages**: Java, Python, C++, Embedded C, SQL, JavaScript, TypeScript, MATLAB, HTML, CSS
- **Database and Storage Solutions:** MySQL, PostgreSQL, SQLite, MongoDB, Redis, Amazon S3
- **Frameworks and Platform:** Spring Boot, Django, React, Node.JS, Express, Amazon Web Services
- **Development Libraries/Tools:** spaCy, NLTK, Docker, Postman, Git/GitHub, Simulink, CANalyzer, J-Link Debugger