AFREED SHAIK

**Farmington Hills, MI - 48334 | +1 (248) 7905769** [**|afreed7shaik@gmail.com**](mailto:|afreed7shaik@gmail.com)

# PROFESSIONAL SUMMARY

Experienced Software Design Release Engineer with expertise in automotive software development, embedded systems, and data analytics. Skilled in managing software requirements, collaborating cross-functionally, and integrating Battery Pack Control Module (BPCM) software into vehicle systems. Knowledge in troubleshooting software and hardware issues using MATLAB, Simulink, CANalyzer, and INCA. Background in Model Predictive Control (MPC), vehicular cybersecurity, and battery management systems. Knowledgeable in software release cycles, risk assessment, and system optimization.

# EDUCATION

**Master of Science**: Electrical and Computer Engineering **Graduated on Dec25 Lawrence Technological University** -Southfield, MI **CGPA:** 3.94/4.0

**Bachelor of Technology**: Electronics and Communications Engineering **[June 2017 – July 2021] Jawaharlal Nehru Technological University, Kakinada** - India.

# EXPERIENCE

**STELLANTIS,** Auburn Hills, MI, USA **[July 2024 – Present] Role: HV Battery Pack SW Release Engineer**

* Develop **BPCM Software Requirements** and communicate set requirements to supplier.
* Work with Powertrain and system development to align requirements and cultivate new requirements.
* Align BPCM timing with **Electrical Powertrain Development and vehicle development** timing.
* Support the **Calibration, Diagnostics, Vehicle Safety,** and **Security Teams** to properly integrate the BPCM into vehicle functions.
* Investigate, track, resolve and reported software issues with BPCM software (Using tools like JIRA) and battery hardware using **CAN, CANalyzer, MATLAB, and INCA ETAS** tools.
* Investigated software issues and report issues to supplier on both pack level and vehicle level.
* Maintained test logs, **BENCH** test and work with FCA labs for setup and test scheduling.
* Lead the weekly PDT meetings on **Release Timings**, **Open Point Lists, Program Issues**, assess the Risk Management Plan, DVP&R, and document meeting minutes.
* Monitor the DVP report at each phase of the vehicle SW release, for **PHEV (Plug-In Hybrid Electric Vehicle).**
* Work closely with a prototype planning team to ensure the builds capture the right content required for DV testing.

**Lawrence Technological University,** Southfield, MI, USA **[August 2023 – July 2024]**

## Role: Research Assistant

**Model Predictive Control for Autonomous Driving Vehicle (ADAS):**

**Tools:** MATLAB, Simulink.

* Designed and implemented a Model Predictive Control (MPC) system for Autonomous vehicles to enhance their navigation and control capabilities.
* Developed a mathematical model of vehicle dynamics using MATLAB and Simulink, considering real-world vehicle mass and road conditions.
* Designed an MPC controller to predict future outputs of the vehicle model and generate optimal control, prioritizing safety, comfort, and energy efficiency.
* Conducted extensive simulations in Simulink to validate MPC controller performance under various driving scenarios.
* Demonstrated significant improvements in vehicle performance, control, and safety through the MPC controller in simulations.
* Studied & acquired knowledge of vehicular communications protocol LIN and CAN protocols using simulation tools like CANalyzer and CANoe.
* Calibrated the ultrasonic sensors and instrumented the vehicle with ultrasonic sensors and Arduino board.

**YBI Foundation [Internship] [July 2023 – August 2023 ] Role: Development Engineer.**

* Developed a predictive Bank Customer Churn model to reduce customer attrition rates and the main goal is improving customer retention rates.
* Using various tools and libraries such as Python and popular libraries e.g., Pandas, Scikit-learn for data preprocessing, feature engineering, and model development. Furthermore, implemented machine learning algorithms e.g., Logistic Regression and Random Forest to predict Customer Churn.
* Leveraged data visualization libraries Matplotlib, Seaborn to create insightful visualizations of customer data.

# New Zen Info-Tech [July 2021 – May 2022]

## Role: Software Engineer.

* Developed a Python application to track and monitor user phone usage, including designing the User Interface (UI) and implementing a feature to alert users to take breaks from the device.
* Collaborated with a team of developers in Agile team meetings, providing valuable input and feedback throughout the software development lifecycle.
* Utilized version control systems such as Git to manage the codebase and facilitate collaboration among team members.
* Engaged in continuous learning and professional development to stay updated with the latest trends and technologies in software development.
* Demonstrated problem-solving skills by troubleshooting and resolving technical issues promptly during the development process.
* Contributed to the documentation process by creating user manuals and technical documentation to support application deployment and usage.

# PROJECTS

## Cyber Security Challenges In-Vehicular Communication.

**Lawrence Technological University [May 2023-July 2023]**

* Addressed complex Cyber Security Challenges in In-Vehicular Communication through adept implementation of robust protocols and advanced encryption measures.
* Proven ability to safeguard vehicular networks against potential Cyber Threats, ensuring secure and reliable communication.
* Demonstrated a strong commitment to enhancing overall safety in the automotive industry.

## Development of a 100 kW Heterogeneous Unifying Battery system for 2nd Life Lithium Battery Applications

**Lawrence Technological University [Jan 2023 - April 2023]**

* Conducted topology study and simulations for a 12 kW Heterogeneous Unifying Battery system for Li-ion batteries. Worked with industrial partners and principal investigators on specifications, design updates, and project delivery.
* Led the test plan development and hardware testing of individual 500 W converter units and modular structure of 4 series connected 500W converters up to a power level of 2 kW.
* Improved the droop controller performance for battery charging by accounting for the cable resistance effect in four series-connected 500W converters. Successfully implemented and tested the setup for modified control loop performance.

## An Energy-Efficient and Spectrum-Efficient Wireless Heterogeneous Network Framework for 5G Systems.

**Lawrence Technological University [July 2022 – Dec 2022]**

* Improved energy efficiency and network capacity using advanced techniques such as Massive MIMO and Beamforming.
* Implemented Network Slicing and deployed Small Cells to enhance network performance.
* Proficient in hardware components including millimeter Waves (mm-Waves), Massive MIMO, Beamforming, Small- Cells, Pico-Cells, and Low power IoT devices.
* Experienced in software components such as Network Function Virtualization (NFV), Software-Defined Networking (SDN), and Advanced Network Protocols.

# CERTIFICATIONS & SKILLS

* Embedded systems are used for detecting Third-party threats in the field of **Cyber Security.**
* MS Office - Word, Excel, PowerPoint.
* Adobe Systems Adobe Creative Suite
* MATLAB, INCA, CANlyzer, SIMULINK,

Deep Learning Onramp, Machine Learning Onramp.

* Artificial Intelligence, Machine Learning.
* Kali Linux, Windows operating system.
* **Scripting:** C-Language, Python, NumPy, Pandas, Data Analytics, Bash, and PowerShell.