Sahana Anand

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EDUCATION----------

Masters in Applied Mechatronics and Cyberphysical Systems **Oct 2020- Sep 2024**
Technische Hochschule Deggendorf, Deggendorf, Germany

Bachelors in Mechatronics Engineering **Aug 2015- Jul 2019**
Visvesvaraya Institute of Technology, India

EXPERIENCE----------

Master Thesis student Software Development
Magna International, Munich, Germany **Jul 2023 - Dec 2023**
Master Thesis in Driver Monitoring Systems: Error Injection in ECU using XCP (C++)
• Coordinated architecture development for ECU systems in automotive controllers using ARM-based SoC architectures (A53 and R5).
• Conducted risk analysis and developed software modules compliant with ISO 26262.
• Contributed to software integration and development under QNX and Linux, ensuring real-time performance.
• Collaborated with cross-functional teams to integrate projects into the software platform, and requirement specifications.

Work student Software deveopment
Magna International, Munich, Germany **Mar 2023 - Jul 2023**
Research and Development team (Electronics)
• Error handling of ECU using XCP module in C++ • Ethernet Degradation Circuit • UDP protocol • Changing UART mode to DMA mode •CAN

Work student Software Development
Flex Automotive GmbH, 70794 Filderstadt, Germany **Oct 2022-Mar 2023**
Research and Development team (Power electronics)
• Implementation of XCP module in C
• Continuous integration using Jenkins

SKILLS----------

Programming & Development: C++ | Embedded C++ | C | Python (TensorFlow, OpenCV, NumPy) | MATLAB | Git | Docker | Vector tools (CANoe, CANalyzer)
Embedded Systems & Operating Systems: QNX | Linux | Integrity RTOS | iOS | ARM-based SoCs | STM32F407VGT6 | Windows
Communication & Networking Protocols: CAN | TCP | UDP | UART | Ethernet | IP
Standards, Compliance & Methodologies: AUTOSAR | ISO 26262 | Risk Analysis
Software Development & Simulation: Software Integration | Verification | Validation | Code Reviews | ROS 2 | Gazebo | Virtual Machines
Microcontrollers & Industry Experience: ARM architectures | STM32 microcontrollers | Hardware circuits | Automotive | Cybersecurity |
Data Analysis & Documentation: Wireshark | Microsoft Office | LaTeX
Languages: English (C2) | German (B1)

PROJECTS----------

Object Detection System
Developed a hobby project to identify objects in images. Leveraged trained machine learning models and utilized tools such as Python, TensorFlow, OpenCV, NumPy, and macOS M1's native capabilities. https://github.com/sahanaanand04/ObstacleDetectionSystem.git
CAN Sniffer System
Developed a system to simulate and analyze CAN frames using Python, STM32F407VGT6, and a virtual machine(Ubuntu).
https://github.com/sahanaanand04/CAN-BUS-SNIFFER-on-MAC.git
AUTOSAR C++14 Checker
Developed a static analysis tool for C++ code, implementing AUTOSAR C++14 coding guidelines. Integrated Clang-based parsing and rule enforcement to detect violations.https://github.com/sahanaanand04/AUTOSAR_cpp14.git
5-Axial Gear System Simulation – MATLAB(Case Study during Masters)
Developed a simulation model for a 5-axial gear system using pure MATLAB, focusing on gear kinematics and torque transmission. Implemented mathematical modeling for gear meshing, rotational dynamics, and load distribution. Verified system performance through numerical analysis and visualization.
Automated Parking Systems
Currently, developing and simulating an Automated Parking System using ROS 2, Gazebo, and Docker to enhance autonomous vehicle parking capabilities.

References—----------

1. Gaurav Srikanth patil ,Senior Staff Engineer at Magna International, gaurav.patil@magna.com
2. Valentino Felsner, SW Principal Engineer at Flex Automotive, valentin.felsner@flex.com