CURRICULAM VITAE

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Personal Profile
Fathers Name: S.Amirthagatesan
Date of Birth : 3rd Nov 1981
Sex : Male
Nationality : Indian
Marital Status: Married
Pass Port No : P6250918
Work Permit : Till July 2024

Overseas Experience
1. Working in Japan for 5+ Years for JOEMs
2. Worked in Malaysia for 2+ Years for ETI Tech

Languages Known
1. English
2. Tamil
3. **Japanese Level N4**

Inter Personal Skills
1. Leadership
2. Strong Communication
3. Project planning and scheduling
4. Learning through innovative modules

Additional Skill Up Training:
TUV SUD, Functional Safety Certified Professional in accordance with ISO 26262-Level-1

Aspiration

To operate as a project lead in a progressive and dynamic environment.

To utilize my 16+ years of automotive industrial technical experience, innovative ideas, learning abilities, leadership qualities, dedication, and hard work towards the growth of the organization.

Patent

Software Driven Cell Balancing System and method there of
Patent No. P120082427 - 01/07/2008
Patent In: Intellectual Property Corporation of Malaysia.

Key Strengths

AD/ADAS/EV Driver Assistance system and Battery Management System for Lithium ion battery packs.
Design and Development:

- ✓ AD (Autonomous Drive) system development and validation
- ✓ ADAS system development and validation
- ✓ dSPACE and VT System validation
- ✓ Automotive ASPICE
- ✓ Battery Management System for Electric vehicle Lithium batteries
- ✓ Intelligent Energy Management System for Lithium batteries

Technical Expertise

Programming Languages:
- ✓ C, C++, MATLAB – SIMULINK, Python

Skills:
- ✓ Embedded system development and validation
- ✓ AUTOSAR, UDS, ISO26262, UART, SPI, I2C, CAN communication

Embedded Tool:
- ✓ MPLab, TargetLink, Trace32, CANoe, CANape

System Tools:
- ✓ CARMAKER, dSPACE, CARSIM, Prescan, UCwin & VT System

Employment Experience

- ➢ Principle Engineer for ADAS in ZF Automotive Japan Co., Ltd from March 2020 to till date.
- ➢ System Engineer for ADAS in Valeo Japan Co., Ltd from Oct - 2017 to March - 2020
- ➢ Engineer in ITK Engineering Japan Inc. from July 2016 to Oct 2017.
- ➢ Assistant Manager in Renault Nissan Technology and Business Centre India Pvt. Ltd from June 2012 to June 2016
- ➢ Senior Member R&D Electrical in Mahindra Reva Electric Vehicle Pvt. Ltd from Oct 2009 to April 2012.
- ➢ R&D Sr. Engineer in ETI Tech (M) SDN BHD, Malaysia from Sep 2007 to Sep 2009.
- ➢ Technical Staff Member in Real Time Tech solutions Pvt. Ltd, Bangalore from Nov 2005 to Sep 2007.
- ➢ Engineer in Kandeep Technology Pvt. Ltd, Trichy from Jun 2004 to Oct 2005.

Academics

- ❖ **MBA** (**International Business**) (**May'2011**) Annamalai University
- ❖ **B.E.** (**E.E.E**) – **7.38 OGPA (April**'2004) Annamalai University
- ❖ **DIPLOMA(D.E.E.E)– 71.8%(Mar'2000)** Muthiah Polytechnic college

Project Summary:

Title : AD–2+ Sensors and function development

Organization : ZF Automotive Japan Co., Ltd.

Environment : DOORS, Vector CANoe, DSPACE ControlDesk, AutomationDesk, MATLAB 2016, CARMAKER, EyeQClient.

Role : Principle Engineer for functional development and validation.

Description:

This project emphasis on meeting five star rating for the vehicles by developing sensors and function for NCAP 2022. This includes developing algorithm for AEB, ACC, TSR, TJP, free-space and LKAS by object fusing from front camera with Mobileye EyeQ–4, front radar and four corner radars.

1. Designed the architecture and developed the test environment for AEB, ACC and Mis-Pedal application in CARMAKER, MATLAB, Target-Link and DSPACE environment in compliance with EURO NCAP 2022 standard and testing the application in MIL, SIL and HIL environment.
2. Functional owner for complete V-cycle for camera application which includes requirement gathering from the JOEMs and follow-up interaction with Mobileye EyeQ-4 to meet the JOEMs requirements and validating the boot-loader, UDS service handling and session handling.
3. Guide the stake holders for function development, testing and maintain the traceability for the complete V-Cycle through LOPs and internal ticketing system.

Title : ADAS Sensor and function development

Organization : Valeo Japan Co., Ltd.

Environment : DOORS, Vector CANoe, MATLAB 2016, CARMAKER and EyeQClient.

Role : System Function Owner for V-Cycle.

Description:

This project emphasis on meeting five star rating for the vehicles by developing sensors and function for NCAP 2020. This includes developing algorithm for AEB, ACC, TSR, TJP, Free-space, RDM and LKAS by front camera with Mobileye EyeQ–4.

1. Functional owner for complete V cycle for camera application which includes requirement gathering from the JOEMs and follow-up interaction with Mobileye EyeQ–4 to meet the JOEMs requirements and support for software architecture development.
2. Designed the architecture and developed the test environment for AEB application in CARMAKER, MATLAB and CANoe environment in compliance with EURO NCAP 2020 standard and testing the application in MIL and HIL.
3. Guide the stake holders for function development, testing and maintain the traceability for the complete V-Cycle through LOPs and internal ticketing system.

Title : AD2 – Front camera development

Organization : Valeo Japan Co., Ltd.

Environment : EyeQ 3.5, SIMULINK, CANoe

Role : Development Resident Engineer

Description:

This project emphasis on developing the hardware, software and testing the front camera for Nissan AD-2 vehicles, this includes developing algorithm for AEB, ACC, TSR, TJP, free-space, LDW and LDP. The Front camera has a FOV of 75deg with EyeQ-3 SOC.

1. Worked as a Resident Engineer where the role focuses on interaction with customer, JOEM and development team for streamlining the system requirement, diagnosis requirement, functional safety requirements and deliverables.
2. Tuning and finalizing the parameters for EyeQ-3 FFS files for NISSAN variants to meet the EURO NCAP 2020 five star rating. This also includes joint testing with the customer to meet the SOP.
3. Worked with Mobileye resident engineer for understanding and optimizing EyeQ functions.

4. Involved in Nissan events such as EIPF, VC, PT1, PT2 and SOP for different variants and vehicles. This involves supporting the team for the deliverables and achieving the event target.
5. Developed test environment for conducting the fault recreation test and also guide the off shore team for test recreation.
6. Conducting customer and internal follow-up meetings for development, testing and tracking the milestones.

Title : Autonomous Drive 2nd Generation INFINITI Q50 full vehicle architecture validation

Organization : Nissan Technical Center, Astugi, Guest Engineer from ITK Engineering Japan Inc.

Environment : CARSIM, dSPACE, ControlDesk, SIMULINK, CANoe and UCwin.

Role : Plant model creation for AD-2 and validation of AD functionality.

Description:

Improve the quality of entire vehicle ECU software functionality by using Electronic Integration Platform (EIPF) and Design-Electronics Integration Platform (D-EIPF) the complete vehicle in loop (VIL) simulation environment creation.

EIPF: The following actual ECU are connected in EIPF bench, AD ECU, DAS, Lithium Controller, Hybrid Controller, ECM, Dual-Clutch Controller, IDM, BCM, DAM, NAVI, Steer By Wire, Instrument Cluster.

D-EIPF: Front-Camera, Front-Radar and 4 Side Radar are simulated by using dSPACE Real Time hardware created HIL environment and Sensor fusion algorithm validation functionality tested by using UCwin around vehicle simulation software.

Autonomous Drive function validation for ICC, LKAS, ALC and Highway start to end drive.

Title : ADAS ECU Plant model Modification and Validation

Organization : Honda R&D Center, Utsunomiya, Guest Engineer from ITK Engineering Japan Inc.

Environment : CARSIM/CARMAKER, dSPACE, ControlDesk, AutomationDesk, SIMULINK, Canalyzer and EMCS.

Role : Plant model modification for TOI and validation of ADAS functionality.

Description:

Hardware in Loop (HIL) development and automation for Advanced Driver Assistance Systems (ADAS) will enhance vehicle safety and better driving. Safety features are designed to avoid collisions and accidents by offering technologies that alert/warning/Vibration the driver to potential problems, or to avoid collisions.

CARSIM software is used to calculate mechanical Vehicle parameter, such as rack load, rack position, Engine RPM etc.

dSPACE DS1600 processor board is used to run the simulation include multiprocessor in real time environment for Engine, Powertrain, Brake, ADAS and Camera, Radar are actual ECU.

dSPACE DS4302 ResBus simulation for 4 CAN channel, such as Vehicle CAN channel, Radar and Camera CAN, HIL CAN and Prescan CAN.

Prescan software is used for Visual real vehicle scenario simulation for CAMERA ECU and Radar ECU. Vector Canalyzer used to monitor CAN network and EMCS is used to monitor RAM variable for ECUs.

HIL configuration is tested for LKAS, RDM, ACC, FCW, CMBS, FSA, LSF and DAM.

Title : ADAS ECU Application software development and ECU Plant model migration.

Organization : Renault Nissan Technical Business India Pvt Ltd, Chennai

Environment : MATLAB-Simulink, CANoe, dSPACE, Controldesk and VT System.

Role : MBD Development with AUTOSAR Compliance and Plant model migration from dSPACE to VT system.

Description :

Developed MATLAB models for the existing hand written ADAS software. Model conversion for Lane Departure warning, Lane departure prevention, blind spot warning and forward collision warning are developed in the MATLAB environment with AUTOSAR compliance and the same are validated in VT system environment. The existing dSPACE plant model with RTI libraries are replace with VT system libraries, and auto code is generated in the MATLAB environment and compiled with Visual studio 2015 and executed in the VT

system. The plant model comprises Vehicle dynamics such as power train, body electronics, regenerative braking, SONAR, cameras and brake system.

Title : Intelligent Energy Management System for 96V 200Ahr Lithium battery pack

Organization : Mahindra Reva Electric Vehicle Pvt ltd, Bangalore

Environment : MPLab, C30, PIC24FJ256GP610A, CAN 2.0, ICD3

Role : Design, Development, Validation & Verification of Code at vehicle level

Description:

Battery being the energy source of the Electric Vehicles, proper utilization and enhancing the life-time of the source is of utmost importance. This is the research being done in MREVA so as to attain the best efficiency of the battery by considering the charge and discharge cycles based on the factors such as temperature, State of Charge and controlling the current flow based on individual battery voltages. The iEMS monitors and controls the above mentioned factors at the vehicle level in addition to Vehicle Diagnostics and data acquisition (DAQ).

It also has REVive feature, where some of the battery energy is kept as a backup which comes to act under critical circumstances. The feature will allow the customer to drive to further extent when the battery SOC is dropped to 0%. Apart from these basic parameters, the battery monitoring system on the whole is being built with safety considerations at the vehicle level, monitoring the charging time, initiating the sleep mode strategy to save the power in other ECU's and other critical statistical parameters

Features:

The iEMS being developed has the following broad functionalities in vehicle

- ✓ Battery cell-voltage, temperature & current measurement.
- ✓ Optimized charge mechanism for better performance of the Battery
- ✓ Estimation of State-Of-Charge (SOC), State-Of-Health (SOH), Time-To-Charge (TTC) and Distance-To-Empty (DTE)
- ✓ Battery Voltage level balancing and optimizing the car performance by managing the drive cycle
- ✓ REVive
- ✓ Monitor and control the charger and Motor controller
- ✓ Interface to the vehicle Instrument panel and Telemetric
- ✓ Logging diagnostic information for trouble shooting

Title **:** Intelligent Battery pack for Electric Vehicle

Patent **:** Cell Balancing Technology using Force Charging

Organization **:** ETI Tech (M) SDN BHD, Kulim, Malaysia

Environment **:** MPLab, PIC16F1513, I2C, RS485, CAN 2.0B, ICD2

Role **:** Design & Developing the code, testing validation of product

Description

Purpose of this project is to make intelligent Lithium Polymer batteries as a source for electric vehicle by monitoring and controlling individual cell's performance. The battery pack has an intelligent LIPO battery modules and Battery pack Level Controller. The capacity of the LIPO battery modules are 185Watts. The module consists of a PIC controller with intelligent BMS and protection circuits. The Battery Management System in the PIC controller protects the battery from over voltage, under voltage, short circuit, over current charge, over current discharge, over temperature and under temperature of LIPO batteries. The Modules can be cascaded in serial and parallel.

The Cascaded Modules are serially cascaded for 52.0Volts and parallel for achieving 10kilowatts. The serially cascaded modules are controlled by a Fujitsu controller. The controller monitors the individual module voltages and achieve cell balancing using patented force charging technology. The CAN bus is provided in the controller to display the battery fuel gauge and status of individual cell in the dashboards, it also used to communicate between battery pack.

Features:

Designed, programmed and Patented Force Charging Algorithm for cell balancing Prepared and designed the Algorithm for intelligent battery management system firmware for the module and the controller board for battery packs. The serially cascaded modules get balanced with voltage less than 10millvolts.

CAN bus network is used to communicate between battery packs for self balancing in battery pack levels and display the cell fuel gauge and the cell status in the dash boards. **Overall efficiency is 98%.**
