

NIRMAL T M

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📍 Baden-Württemberg, Germany

🌐 Nationality : Indian

📅 Date of Birth : 10.02.1992

🌐 tmnirmal.github.io



"A dedicated professional with extensive experience in automotive embedded systems, specializing in software development, diagnostics and integration for advanced technologies."

EXPERIENCE

Software Architect

HELLA Aglaia Mobile Vision GmbH

📅 Oct 2023 – Ongoing

📍 Ullsteinstraße 140, 12109 Berlin

- Leading the development of a **generic hardware platform** for microcontrollers (e.g., RL78), aimed at enabling scalable solutions for sensor and actuator projects.
- Performing in-depth analysis of existing sensor projects and designing reusable architectural frameworks while progressing towards PoC validation.
- Supported the development of the **Ice Detection Sensor** application, a non-AUTOSAR C++ project, ensuring MISRA compliance and robust software solutions.
- Standardized **Diagnostic Trouble Codes (DTC)** across the Hella group by creating a unified system and designing a DTC Event Validation (DTCEV) middleware package for universal use.
- Conducted comprehensive project analysis, developed architectural designs, and successfully implemented a PoC to drive organization-wide standardization.

Senior Software Developer

EDAG Engineering GmbH

📅 June 2022 – Sept 2023

📍 Schickardstraße 60, Böblingen

- **Application Development for Hella ECU – DCDC Converter ECU (Powertrain):**
- Supported the development of application software components for the Hella ECU, specifically for the **DCDC Converter ECU** used in Audi's powertrain systems.
- Worked on design and implementation of change requests, architectural updates, and ensured compliance through **MISRA** updates.
- Conducted detailed analysis, developed software components, and contributed to overall application development activities.
- Utilized **Integrity Client PTC, DaVinci, DOORS, Rhapsody, and Vector CANoe** for effective development, integration, and testing within AUTOSAR 4.2.1 framework.

Senior Software Engineer

Bosch Global Software Technologies (P) Ltd

📅 Jan 2017 - Mar 2022

📍 KGiSL IT Park, Coimbatore, India

- **Diagnostic Development for Powertrain ECU – BMW Engine ECU (All Series):**
- Developed the diagnostic layer and configured **Powertrain ECU** for BMW engine ECUs across various series.
- Configured diagnostic tester jobs, integrated **Dext (Diagnostic Extract Template)**, and managed signal configuration and ECU testing for diagnostic jobs.

EDUCATION

M.Tech. in Embedded Systems

University of Calicut

📅 Aug 2013 – Oct 2015

- CGPA : 8.97
- Passed with Distinction and First Position in College & Secured 3rd Position in University of Calicut.
- **Master Thesis** : Real-Time CCL Implementation & Optimization on Raspberry Pi – QuEST Global:
- Developed and optimized the **Connected Component Labelling (CCL)** algorithm using the Light Speed Labelling Algorithm on Raspberry Pi to achieve real-time performance.
- Focused on improving memory utilization and processing efficiency to adapt the CCL algorithm for a low-end computing platform like Raspberry Pi.

B.Tech. Electronics & Communication

University of Calicut

📅 Sept 2009 – May 2013

- CGPA : 8.34
- Passed with Honours and Secured 53th Position in University of Calicut.
- **Main Project** : Robotic Wheelchair – AI-Aided Vehicle for Physically and Mentally Challenged:
- Designed and developed an **AI-enabled** robotic wheelchair equipped with **artificial hand**, sensors, and multi-modal control interfaces.

HOBBY PROJECTS

🔌 Embedded System Prototyping with TI TMS570LC43

Designed and implemented hobby-level embedded applications using the TMS570LC43 safety microcontroller, focusing on UART communication, CRC32 calculation, and FreeRTOS integration. Utilized HALCoGen for peripheral configuration and Code Composer Studio for development and debugging.

- Utilized tools such as Eclipse, XML, ARXML, AUTOSAR 4.2, SignalTool, INCA, UDE (Universal Debug Engine), Axe Star, and ECU TEST-TOOL for effective diagnostics development and testing.
- Instrument Cluster Development:**
- Led the application layer development for **Automotive Instrument Clusters**, supporting customers including Audi, VW, Porsche, and FCA-Maserati.
- Managed Software Component (SWC) layers, which included applications such as Speedometer, Service Key, Trip Reset Button, Lap Timer, and Diagnostics Configuration Manager.
- Automated code generation** from requirements to improve productivity, utilizing **Perl scripts** for efficient code creation.
- Designed and developed a **GPS-based Speedometer** application from scratch, implementing precise speed measurement and data processing.
- Coordinated efforts with **Robert Bosch GmbH**, Böblingen, Germany, ensuring alignment on development milestones and project deliverables.
- Employed **Eclipse**, **Perl Script**, **AUTOSAR 4**, **IBM Rational Team Concert (RTC)**, **DaVinci**, **GreenHills MUTI IDE**, **Cygwin** for development and testing.

Senior Software Engineer

Tata Elxsi Ltd.

📅 Aug 2016 – Dec 2016 📍 Technopark, Trivandrum, India

- AUTOSAR DCM Stack Migration – Tata Motors**
- Migrated the **DCM Stack** from AUTOSAR 3.X to 4.2.1 for Tata Motors.
- Added **ReadDataByDID (0x22)**, **WriteDataByDID (0x2E)**, **IOControlByDID (0x2F)**, and **ReadDataByPeriodicDID (0x2A)** services to the DCM Stack in compliance with AUTOSAR 4.2.1 specifications.
- Conducted **Developer Testing** to validate the new services and ensure functionality.
- Performed **eZyconfig** modifications to support the integration of these services into the AUTOSAR system.
- Utilized **Eclipse Mars**, **AUTOSAR 4.2.1**, **eZyconfig**, **Velocity (VM) Script** for eZyconfig modification, and **Cygwin** to execute development tasks.

Software Engineer

Acsia Technologies (P)Ltd.

📅 June 2015 – July 2016 📍 Technopark, Trivandrum, India

- GENIVI Platform Development with Qt – iMX6 SABREE AI:**
- Built the **GENIVI 7.0.3** platform with **Qt 5.5** for the iMX6 SABREE AI board, enabling **Automotive HMI** functionalities.
- Developed HMI features, including **climate control** and **media player**, with the interface designed in **Qt** and functional implementation integrated with the **GENIVI** middleware.
- Leveraged **Linaro ARM toolchain**, **Yocto build procedure**, and Linux-based installation for platform development.
- Automotive HMI Testing Tool Development:**
- Developed an **Automated Non-Invasive Testing Suite** for testing the **Automotive HMI** interface design, functionality, and performance.
- Conducted tests on **equipment operation**, ensuring correct **display updates** using a combination of **camera**, **CAN interface**, and **touch simulation device**.
- Utilized **Qt QML**, **OpenCV**, **Linaro Automated Validation Architecture (LAVA)**, and **Linux application development** to create and execute robust testing mechanisms.



Raspberry Pi-Based Automation and IoT Projects

Built various DIY projects using Raspberry Pi, including sensor interfacing, data logging, and Python-based automation. Integrated GPIO control, serial communication, and simple web-based dashboards for monitoring and control.

ACHIEVEMENTS



Deutsch Certificate with 93 %

The European Language Certificates (DTZ)



Best Performer Award

Bosch Global Software Technologies Private Limited



Foundation Level Certificate in Software Testing

ISTQB ITB-CTFL-0092241



DevOps Practitioner

Simplilearn Certification Training with live project

TOOLS AND EXPERTISE

DOORS Rhapsody Git EA

PTC Integrity UDS Matlab Qt

DaVinci Developer & Configurator

IBM Rational Team Concert (RTC)

IBM RQONE AXE Star ECU TEST

eASee/SCM & INCA Visual Studio

GreenHills MUTI IDE IAR Debugger

AUTOSAR GENIVI UDS ISO-14229

ASPICE Functional Safty ISO-26262

MISRA RTOS FeeRTOS QNX

Linux

C C++ Embedded C Xml Arxml

Perl OpenCV Qt QML Velocity Script

Capel Script VHDL Core Java Python

LANGUAGES

Malayalam



English



German



PUBLICATIONS

Journal Articles

- K. R. J. Nirmal T M. and R. K., "Implementation and optimization of connected component labeling in raspberry pi," *ARPJ Journal of Engineering and Applied Sciences*, vol. 10, no. 17, pp. 7670–7677, Sep. 2015.
- R. K. Nirmal T M. and K. R. Joy., "Implementation and optimization of core computer vision function in raspberry pi," *International Journal of Applied Engineering Research (IJAER)*, Special Issue, vol. 10, no. 20, pp. 15 932–15 937, May 2015.
- Nirmal.T.M. and A. Suraj., "Dedicated multicore reconfigurable processor for image processing," *Karpagam Journal of Engineering Research (KJER)*, Special Issue on IEEE Sponsored International Conference on Intelligent Systems and Control (ISCO'15), vol. 2, no. 66, pp. 159–165, Jan. 2015.
- K. Anoop Suraj. Mathew Francis and T.M.Nirmal., "Discrete wavelet transform based image fusion and de-noising in fpga," *Journal of Electrical Systems and Information Technology (Elsevier)*, vol. 1, pp. 72–81, Mar. 2014.
- Nirmal.T.M., "Wheelchair for physically and mentally disabled persons," *International Journal of Electrical and Electronics Research(IJEER)*, vol. 2, no. 2, pp. 112–118, Jun. 2014.
- Nirmal.T.M., "Multipurpose robot for patients and military applications," *International Journal of Electronics Communication and Computer Technology(IJECCT)*, vol. 4, no. 4, pp. 676–680, Jul. 2014.

Conference Proceedings

- R. K. Nirmal T M. and K. R. Joy., "Implementation and optimization of core computer vision function in raspberry pi," ser. IEEE Sponsored 2nd International Conference on Innovations in Information, Embedded and Communication systems (ICIIECS)2015, vol. 7.133, Karpagam College of Engineering, May 2015, pp. 74–79.
- Nirmal.T.M. and A. Suraj., "Dedicated multicore reconfigurable processor for image processing," ser. IEEE Sponsored 9th International Conference on Intelligent Systems and Control (ISCO) 2015, vol. 1.129, Karpagam College of Engineering, Jan. 2015, pp. 704–715.
- Nirmal.T.M. and J. P. Karippai, "Case study on renewable energy sources," in *Conference Precedences*, ser. EXOPP Exploration of Power Play, vol. 1, P.T.Lee Chengalvaraya Naicker College of Engineering and Technology, Ooveri, Kancheepuram District., Sep. 2011, pp. 266–279.

DECLARATION

I Nirmal Thyvalappil Muraleedharan hereby declare that the above mentioned information is correct up to my knowledge and I bear the responsibility for the correctness of the above mentioned particulars.

July 16, 2025



Nirmal Thyvalappil Muraleedharan