Chandru Shanmugam

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PROFILE SUMMARY

An accomplished and energetic individual with experience in R&D (New Product Development, Driver Protocol Testing), Automotive machine applications and Industrial field applications (Machine Automation/Factory Automation). My responsibilities include project design, software development, commissioning, testing, and integration of all Automation systems. I consider myself a sociable team player that strives for perfection in whatever I do. I am an excellent problem solver, a quick learner, and a highly adaptable individual. I am always keen to learn new concepts and try to incorporate them into my work.

EXPERIENCE

Dec 2022 - Present — **System Engineer,** Västerås, Sweden
Zriya Digital Solutions AB

Software functionality and performance testing for various HMI driver Protocols using PLC and network tools such as Wireshark. Create PLC projects for testing that use different software based on the driver protocol. Comprehensive testing of all software components using a variety of test cases Making certain that all work is documented in accordance with departmental procedures. Interacting with developers and business users to express problems utilizing DevOps, actively participating in bug replication and regression testing.

Aug 2021 – Nov 2022 — **Embedded Software Engineer,** Chennai, India
Caterpillar India Pvt Ltd

Create control system algorithms for applications such as automotive traction control, brakes, and joystick controls. Make display software for the Operator Control and Maintenance Station. Give technical assistance to the Product team. Product group reviews design. Perform failure or root cause analyses. Alter or modify designs to achieve desired functional or operational performance. Assist the Tucson, USA-based engineering team with continuous process improvements and aftermarket support.

Nov 2019 – Jul 2021 — **Engineer - Trucks and Off highway Vehicles,** Chennai, India
L&T Technologies Service Pvt Ltd

Contracted through L&T to work with Caterpillar Inc to build design and develop PLC/ HMI/ SCADA applications. Responsible for testing automation software using Hardware and software in the loop. Responsible for aftermarket solutions - Dealer Service Network projects, New Program Initiative, New Technology Initiative, and Continuous Process Improvement

Jun 2016 – Nov 2019	**Project Engineer – Factory Automation Solution, Base Automation Technologies Pvt Ltd**	Chennai, India

Understand the requirements and objectives to provide End to End automation solution. Project Planning. Programming the PLC and developing the HMI and SCADA screens conducting the Factory Acceptance Test (FAT) for the Projects. On-site commissioning, troubleshooting and Product Development Life Cycle.

TOOLS AND SKILLS

SDLC	Waterfall, Agile (Scrum, Kanban)
Process tracking	Azure DevOps
Software Development	PLC (IEC 61131-3 ST, Ladder, FBD), Embedded C, UI(HMI/SCADA), MATLAB/Simulink, VB Scripting, LabView, Python Basics, dSPACE
Version Control	GIT
Networking	Network Protocol (CAN, J1939, Ethernet/IP, Modbus, Profinet, Profibus, S7 Comm,' OPC UA, Wireshark
Others	Continuous Integration, Automated Testing, MES Integration, Reverse Engineering, Vector Tools,

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EDUCATION

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Jul 2012 — May 2015	Bachelor's degree in Mechatronics Engineering, Kongu Engineering College, affiliated to Anna University	Tamil Nadu, India
Jun 2009 — Apr 2012	Diploma in Electronics and Robotics, Swamy Abedhanandha Polytechnic College, affiliated to Directorate of Technical Education Tamilnadu	Tamil Nadu, India

PROJECTS

HMI Driver Protocol Testing (2023)

Tools Used: iX designer, Codesys, BCS tools, GIT, Azure DevOps, other PLC development tools

• Assist with the creation of test strategies and processes. • Assist with the testing process as it is delegated. • Complete all prescribed test-related tasks. • Will be under responsible for conducting the test as planned. • Issue debugging - Collaborate closely with the development team to examine test failures and issues. • Interacting with other testing teams to use their methodologies to build plans for future testing such as automation. • Preparing the plan for establishing the hardware test bench.

Machine Software for MD6640 Electric Rope Shovels (2021-2022)

Tools Used: AB Compact Logix-L81E, PanelViewPlus-7 1500 Performance HMI, Encoder, Ethernet/IP communication, J1939 Protocol, ECM/ECU

Languages Used: Embedded C, Structured Text, Ladder, Function Block Diagram, C, VB Script, MATLAB Simulink

• Migration project from Siemens platform to Rockwell platform. • The existing Siemens PLC and HMI were S7 300 and WINCC 7.0 SCADA with the IPC (Windows 7). • While I started working on this project had to carry over all the content from the existing Siemens HMI to the Rockwell HMI (Panel view - Windows CE) • Since there were some limitations in the Rockwell development tool and the Panel view hardware. Faced with too many challenges during the migration work. Somehow, we had overcome all the hurdles and delivered the software to the customer on time

Machine Software for MD6640 Electric Rotary Drills (2020)

Tools Used: Siemens S7-400, WinCC 7.4, S7-Comm, TCP/IP and UPD communications, Profibus, ECM/ECU

Languages Used: Structured Text, Ladder, Function Block Diagram, C, VB Scripting

• Part of the aftermarket support team. • Develop the retro type of functionality to the existing machines • Development of new additional functionality to the existing code. • Also developed some new HMI screens and did some R&D work to enhance the machine functionality

Off Road Tires Strip Winding machine (2019)

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Auto weighing machinery production line for Rubber Industry (2017)

Tools Used: AB Compact Logix-L320ERM, Power Flex 753 Drive, PanelViewPlus-7 1000 Standard HMI, Encoder, Kinetix-6500 Drive, Ethernet/IP communication, TIA Portal

Languages Used: Structured Text, Ladder, Function Block Diagram, C, VB Scripting

To obtain the requirement, I had to consult with the marketing team. I had to create the project plan and collaborate with the other team to provide requirements and execute the plan. It was necessary to consult with the customer to obtain permission for the design. In addition to project planning, I had to work on the control system section because I am solely responsible for it. I had to arrive the BOM for the control system and procure the items with the assistance of the procurement team. I had to write the PLC and design the HMI/SCADA based on the requirements, and I had to evaluate and optimize the code. After completing the assignment, I needed to invite the customer to evaluate the system. Once the customer's approval was obtained, the system and the customer's location were commissioned, and the machines were delivered to the client.