

SOHINI DHAR

Engineer, Firmware – II
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LinkedIn profile: [Link](#)
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SUMMARY

- A competent professional with industry experience of 3 years in software development.
- Learning enthusiast with the ability to adapt to a wide range of roles appointed.
- Strong programming skills in C++ with the latest standards of C++14 and C++17 on Linux platforms.
- Knowledge of the Google Test Framework for adding preliminary tests to the production code for rapid turnaround.
- Experience working in Agile Methodologies and Lean Software Development as a part of global teams across the USA, UK, and India.
- A team player with strong communication, analytical and problem-solving skills providing growth potential.

SKILL SUMMARY

- **Programming Languages:** C++, C, Python [Basics], PHP [Intermediate].
- **Development Tools:** GIT, MATLAB, JIRA, QMetry, Selenium Web Driver, Eclipse, Microsoft Visual Studio Code.
- **Protocol tools:** IEC Browser
- **Protocols:** IEC61850, Modbus [Basics]
- **Operating System:** Linux Mint, Windows
- **GitHub Repo:** [sdhar-ProgrammingSolutions](#)

EDUCATION

Institute Name	Specialization	Grades	Duration
Indian Institute of Technology Gandhinagar, Gujarat	M.Tech (Electrical Engineering)	8.63/10	2016-18
Siliguri Institute of Technology, West Bengal	B.Tech (Electrical Engineering)	9.35/10	2011-15

PROFESSIONAL EXPERIENCE DETAILS

Company	Role	Duration	Location
Qualitrol LLC	Engineer-Firmware-II	July, '19-Present	Ahmedabad
Qualitrol LLC	Post Graduate Engineer Trainee	July, '18-June, '19	Ahmedabad

MAJOR PROJECT DETAILS

[All other project details are present on my [Website](#)]

- **EMO**

[Organization: Qualitrol LLC | Team Size: >10 | Duration: Current Project | Environment: Windows, Linux, C++, JIRA, Qmetry, GitLab, Visual Studio 19]

- My current role in the Global Team is to work on developing a generic library which will act as a Generic File Parser for different COMTRADE files of Revision Year :1991,1999,2013. This will help different products in Qualitrol to use the same file Parser Library for parsing COMTRADE files.
- My work will involve writing a well-designed modern Library using C++ modern constructs which can be portable over Linux and Windows operating systems.

- **QTMS (Qualitrol Transformer Monitoring System)**

[Organization: Qualitrol LLC | Team Size: 6 | Duration: 7.5 months | Environment: Linux, C++, C, PHP, JavaScript, JIRA, Qmetry, GitLab]

- I am a part of the Global Team working to provide an interface to the customers to integrate 3rd Party devices onto the QTMS seamlessly without intervention from the Engineering department. The Devices could connect to various protocols like MODBUS, IEC61850, and DNP3 and provide outbound connections with the same protocols. My role is to develop applications for the device which will be utilized by the customer to get the required sensor information.
- My work primarily involves creating the C++ Backend application to add a sensor dynamically so that we get the outbound sensor information through IEC61850. Before implementing this feature, I have been working on refactoring the old legacy code written in C and converting it out using the modern C++17 constructs along with writing Unit Tests (using Google Test Framework) to validate code changes. This was a gigantic task to organize 4000 lines of code into systematic classes and files and then forming a method to dynamically integrate the sensor.
- My new application is organized using design principles (Factory, Builder, and Strategy patterns) and modern C++ constructs (STL Libraries, Standard Algorithms, Regex, etc). This is written keeping in mind that whoever maintains the code in the future will be at complete ease to understand the code. Along with this, I have designed several libraries to facilitate the work of my teammates.

- **QBCM (Qualitrol Breaker Condition Monitoring)**

[Organization: Qualitrol LLC | Team Size: 8 | Duration: 8 months | Environment: Linux, C++, C, PHP, JavaScript, Python, JIRA, QMetry, GitLab]

- I was a part of the Global QBCM (Qualitrol Breaker Condition Monitor) team working on the development of a new product. QBCM is used to monitor and record each operation of an independent pole-operated circuit breaker and automatically compares this data with Absolute Limits, set as part of the configuration. This product is a revamped version of another BCM2, which involves all the latest coding methodologies and implementations.
- My primary role was to develop and enhance the Linux platform and multi-threaded application that enables the device's features like the implementation of analytics like Days to the lockout, total emission in SF6 Monitoring; integration of a virtual traveller in case of each operation of a breaker; and motor analysis. I have successfully developed the analytics for these features in C++ and written Unit tests to validate work.
- The Web Application for this product is written in PHP7 using an object-oriented design. I have worked on designing the web pages and tying the front end to the back end to get appropriate data on the Dashboard. In my PHP work scope, I have worked with REST endpoints to get data to and from the server.
- I have also written several Automation scripts for End-to-End Web Automation for our product using Selenium Framework in Python Language.

- **Simulation, Analysis, and Validation of Indian Residential Electricity Consumption using Agent-Based Modeling.**

- Analyzed the appliance level actual power consumption data available on the internet.
- Designed and validated an Agent-Based model to reproduce the power consumption of households and the individual appliances present in the house.
- Predicted the power consumption of different Indian households for the year 2012 based on data available for 2004 with an error margin of 6%, which was a major step in demand-side management of the residential sector.
- Predictions were based on several factors like socio-economic conditions, climatic conditions, geopolitical situations, user behaviour, availability of appliances, and usage pattern of appliances.
- Presented my work as the first author in proceedings of the 28th European Symposium on Computer Aided Process Engineering, June 10th to 13th, 2018, Graz, Austria, titled: "Simulation and Analysis of Indian Residential Electricity Consumption Using Agent-Based Models". Link: [ESCAPE_Paper](#)

ACHIEVEMENTS

- Received several accolades and certificates for demonstrating "Fortive9" behaviors: "Building Extraordinary Teams", "Adaptable", "Delivering Results", "Inspiring" in my regular work. [19-'20]
- Achieved a score of **753/1000** in Graduate Aptitude Test in Engineering (GATE-Electrical). [16]

TRAINING UNDERTAKEN

- **LSD Kaizen:** Lean Software Development Kaizen as a tool under Fortive Business System. [Nov, '18]
- **PRTI Kaizen:** Personal Review and Team Inspection Kaizen as a tool under Fortive Business System. [Oct '19]
- **Effective Communication Skills:** Communication Skill Improvement Training under Fortive. [Sept '19]