SOHINI DHAR

Engineer, Firmware – II

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SUMMARY

- A competent professional with industry experience of 2 years and 8 months 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], JavaScript [Basics].
- **Development Tools:** GIT, MATLAB, JIRA, QMetry, Selenium Web driver, Eclipse, Microsoft Visual Studio.
- **Protocol tools:** IEC Browser, Wireshark, ASE Tool
- **Protocols:** IEC61850, Modbus [Basics]
- **Operating System:** Linux Mint, Windows
- **GitHub Repo:** [sdhar-ProgrammingSolutions]

EDUCATION

Institute Name	Specialization	Grades	Duration
Indian Institute of Technology, Gandhinagar	M.Tech (Electrical Engineering)	8.67/10	2016-18
Siliguri Institute of Technology, Siliguri, 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

PROJECT DETAILS

- **QTMS (Qualitrol Transformer Monitoring System)**
  [Organization: Qualitrol LLC | Team Size: 6 | Duration: Current Project | 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 on to 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.

- o 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.
- o My new application is organized using design principles and modern C++ constructs. This is written keeping in mind that whoever maintains the code in 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.

- **QTMS (Qualitrol Transformer Monitoring System)**
  [Organization: Qualitrol LLC | Team Size: 5 | Duration: 1 month | Environment: Linux, PHP, JavaScript, JIRA, Qmetry, GitLab]
  - o I was part of the Global Team working on improving the security constructs in the product line. We used REST Endpoints to authenticate the security feature and provide a secure login experience to the user.
  - o We have designed ways in which the user will be able to change their passwords. Also, administrator users will have access to special pages which will not be accessible to an operator. All of these functionalities were achieved using the GET and POST methods of REST and the API we created for the server to interact with.

- **QBCM (Qualitrol Breaker Condition Monitoring)**
  [Organization: Qualitrol LLC | Team Size: 8 | Duration: 8 months | Environment: Linux, C++, C, PHP, JavaScript, Python, JIRA, Qmetry, GitLab]
  - o 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.
  - o 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.
  - o 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 RESTEndpoints to get data to-and-fro from the server.
  - o I have also written several Automation scripts for End-to-End Web Automation for our product using Selenium Framework in Python Language.

- **QTMS (Qualitrol Transformer Monitoring System)**
  [Organization: Qualitrol LLC | Team Size: 4 | Duration: 2.5 months | Environment: Linux, C, PHP, JavaScript, Selenium Web driver with Python, JIRA, Qmetry, GitHub]
  - o As a part of an urgent customer requirement, we had to develop features like Email Facility for our product QTMS. This is a Condition Monitoring Device which is responsible to monitor different parts of a Transformer. It also has features for reporting Analytics based on algorithms developed by the Expert Services Team of Qualitrol.
  - o I had successfully adapted to the responsibility of testing (both manual and automation) the features developed in each Sprint.
  - o As a part of the development team, I have also resolved customer bugs and improved the quality of the product.

- **Neoptix Product Line – T/Guard 408**
  [Organization: Qualitrol LLC | Team Size: 3 | Duration: 2.5 months | Environment: Linux, C, JIRA, Qmetry]
  - o Neoptix measures the hot spot winding temperature of the transformer winding and reports in a device called T/Guard 408.
  - o I have worked on fixing the faulty Neoptix Devices as and when they would be sent from the field for repair.
  - o During the repair work, I observed a scope of improvement. I took up the initiative to develop an Automation Test Framework for the Team, which helped them in finding bugs quickly and efficiently.

- **Smart-SUB Enterprise (SSE)**
  [Organization: Qualitrol LLC | Team Size: 15 | Duration: 1 year | Environment: JIRA, Qmetry]
  - o SSE is a UI based desktop application that helps in monitoring substations by displaying the data captured by the field sensors on the Dashboard.
  - o It is entitled to procure data over the following protocols: SOAP, DNP3, IEC61850, Modbus
  - o It was my responsibility to perform the manual testing of the features developed in each Sprint. During my involvement with SSE, I had identified several critical and blocker bugs which helped us in improving the quality of our product and delivering the product on time.

- **Simulation, Analysis and Validation of Indian Residential Electricity Consumption using Agent-Based Modeling.** *[Thesis Work: January,'17-May, '18]*
  - o Analyzed the appliance level actual power consumption data available on the internet.

- o Designed and validated an Agent-Based model to reproduce the power consumption of households and the individual appliances present in the house.
- o 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.
- o Predictions were based on several factors like socio-economic conditions, climatic conditions, geopolitical situations, user behaviour, availability of appliances, and usage pattern of appliances.
- o 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

POSITION OF RESPONSIBILITY

- **Member of Employee Resource Group and Fun Committee in Qualitrol LLC.** *[Jan,'19-Present]*
  - o I am a part of the committee, which is responsible for employee engagement, and planning various cultural events at the office.
- **Teaching Assistant.** *[July, '18 – Dec, '19]*
  - o As a part of our MTech program in IIT Gandhinagar, we had to take up the responsibility of Teaching Assistant. I was a TA for Electrical Systems Lab and Electrical Machines Lab.
  - o I was responsible for holding Lab Sessions for the Final Year Undergraduate Students, invigilate in their examinations and provide suitable grades to them.

ACHIEVEMENTS

- Received certificates and prize money accounting to $10 for demonstrating "Fortive9" behaviors: "Building Extraordinary Teams", "Adaptable", "Delivering Results", "Inspiring" in my daily work. *['19-'20]*
- Achieved a score of **753/1000** in Graduate Aptitude Test in Engineering (GATE-Electrical). *['16]*
- Won the Best Actor (Female) Award in Blithchron, as a part of the Abhinaya club at IIT Gandhinagar (Cultural Fest of IIT, Gandhinagar). *['17]*
- Achieved the 1st position in academics in my BTech. Batch. *['15]*

TRAININGS 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]*