



# SMIT KETANKUMAR SHAH

M.S in Electrical System Engineering

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## SUMMARY

Self-motivated Electronics & Telecommunication Engineer with a Master's degree in Electrical Systems Engineering and strong expertise in digital logic, analog circuits, VLSI, embedded systems, robotics, IoT, and power electronics. Skilled in hardware implementations, PCB design and circuit simulation, SQL, Tableau, and programming languages like Python and Matlab.

## SKILLS

### Programming Languages:

C, C++, Arduino, Python, MATLAB, SQL

### PCB Design:

KiCad, LTspice, EasyEDA, Proteus, Altium

### VLSI:

Xilinx ISE, Xilinx Vivado, FPGA

### Robotics:

RoboAnalyser, ROS, Gazebo

### Embedded Systems:

Keil, MPLAB, RTOS

### Power Electronics:

NI Multisim, NI Labview, Psim

## WORK EXPERIENCE

Mar. 2023 – Present

### Working Student: Technical Marketing and Application Engineering

*Infineon Technologies AG, Warstein, North Rhine-Westphalia, Germany*

- PCB design using Altium and board testing for optimal functionality.
- Python-based automation for various applications, improving efficiency.
- Development and maintenance of Tableau reports for data visualization and insights.

Jul. 2021 – Sep. 2022

### Assistant System Engineer

*Tata Consultancy Services Ltd., Bangalore, Karnataka, India*

- Contributed to the Cloud Migration project for Bed Bath and Beyond, migrating data from Teradata to GCP using BigQuery, SQL, and Python.
- Responsible for writing SQL queries, data validation, and Python coding for DAG creation. Optimized Teradata SQL queries to reduce execution time and implemented parallel processing to lower execution costs.
- Received recognition from Bed Bath and Beyond and was awarded TCS Star of the Month for exceptional performance.

Jan. 2020 – Jun. 2020

### Working Student: Technical Marketing and Application Engineering

*Infineon Technologies AG, Warstein, North Rhine-Westphalia, Germany*

- Worked on the company's one of the Big Bet projects named ROAD2 (Retrofit Option for Autonomous Driving – Level 2), focusing on the development of autonomous driving solutions.
- Responsible for circuit design, coding using Python, and testing to ensure the functionality and performance of the system.

## PROJECTS

Oct. 2023 – Sep. 2024

### Rescue Robots

In this project, I was part of the Mapping Subgroup, which focused on improving map quality by enhancing robot localization, applying various optimization techniques, increasing loop closure reliability, and filtering dynamic objects. The project built on the LOAM algorithm, integrating IMU data and loop closure to improve map accuracy. I created a templated structure supporting multiple graph optimizers (g2o, SE-Sync) and implemented dynamic object filtering using SegFormer B1 for semantic segmentation. This approach involved projecting 3D Lidar points onto a 2D image plane to detect and remove dynamic objects. Through various test cases, I assessed the impact of IMU calibration, loop closure, and dynamic object filtering, achieving significant improvements in map quality.

Jun. 2020 – Jun. 2021

### S2SLT-E2K: Sequence to Sequence Language Translation from English to Konkani using Neural Machine Systems

This was our B.Tech project. In this, we translated English Sentence to Konkani Sentence. We used an Encoder, Decoder, LSTM layer in sequence-to-sequence model and Adam optimizer with various regularization parameters for training the model. We had taken approximately 70k pairs of sentences as a dataset for our project and we were able to get an accuracy of around 60%.

Oct. 2019	<b>Alcohol Detector using Arduino</b> In this project, we used an MQ-3 sensor and interfaced it with Arduino Uno, LCD, and Buzzer. I was responsible for circuit and PCB design and mounting the components. I was also heading the team. In the project, the MQ-3 sensor detects the proportion of Alcohol, and then if the proportion of alcohol is more than 40%, LCD will display the alert that alcohol consumption is more, as well as the buzzer, will make a sound.
Oct. 2019	<b>PWM Based DC motor control using 8051</b> In this project, we used 89C52 IC which was interfaced with the motor driver to control the speed of the motor. We even build the power supply for driving the circuit with the help of a transformer, power diodes, and IC 7805 and 7905 to convert 230V AC to 5V DC. We were using a PWM signal to control the speed of the motor. I was responsible for circuit designing and simulation on Proteus software and coding in Keil software. I was also heading this project.
Apr. 2019 – May. 2019	<b>Parallel BMS</b> This project, developed for the Smart India Hackathon (Hardware Edition), addresses the limitations of lithium-ion battery technology for e-vehicles. To achieve the 48V required, we integrated a boost converter from 3.7V to 48V using cost-effective power components like MOSFETs, inductors, capacitors, resistors, ICs, and diodes. Our design aims to be durable, cost-effective, and resistant to wear, addressing the challenges of limited battery supply and the lack of environmentally safe recycling methods.

## EDUCATION

Oct. 2022 – Present	<b>Universität Paderborn, Paderborn (Germany)</b> Master of Science in Electrical System Engineering Specialization: Electronics and Devices	/4.0 CGPA
Jun. 2017 – Jul. 2021	<b>Symbiosis Institute of Technology, Pune (India)</b> Bachelor of Technology, Electronics & Telecommunication Engineering	7.59/10 CGPA

## CERTIFICATIONS

May. 2023	Learning FPGA Development (Linkedin Learning)
May. 2023	Learning Verilog for FPGA Development (Linkedin Learning)
Mar. 2023	Learning Altium (Linkedin Learning)
Mar. 2021	AI for Everyone: Master the Basics (edX)
Dec. 2020	Assessment for Python programming Basics (Hackerrank)
Sep. 2020	Hands-on workshop on Fundamental of Linux and Data Analysis by _VOIS
Jun. 2020	Programming for Everybody: Getting Started with Python (Coursera)
Jun. 2020	Self-Driving Cars Specialization (Coursera)
Mar. 2020	IC Design Process: A Beginner's Overview to VLSI Technology (Udemy)
Mar. 2020	KiCad (Udemy)
Feb. 2019	Programming with Python (Internshala)
Aug. 2018	Hands-on workshop on Arduino Programming by Symbiosis Institute of Technology, Pune

## LANGUAGES

**English** - C1, **German** - B1, **Gujarati** - Native or Bilingual, **Hindi** - Native or Bilingual

## AWARDS & ACHIEVEMENTS

2020	<ul style="list-style-type: none"> <li>Participated in ABU - Robocon 2020</li> <li>Participated in Eyantra International Robotics Competition (eYRC'20) of IIT Bombay</li> <li>Participated in Bajaj Finserv, HealthRx Hakathon</li> </ul>
2019	<ul style="list-style-type: none"> <li>Events &amp; SR Co-head at Vidhyut'19, college's Techfest</li> <li>Participated in Eyantra Robotics Competition (eYRC'19) of IIT Bombay</li> <li>Participated in Smart India Hackathon 2019 (Hardware Edition)</li> <li>Participated in DST &amp; Texas Instruments India Innovation Challenge Design Contest 2019</li> </ul>
2018	<ul style="list-style-type: none"> <li>Participated in Eyantra Robotics Competition (eYRC'18) of IIT Bombay</li> </ul>
2017	<ul style="list-style-type: none"> <li>Established a Robotics Club named ROTONITY at Symbiosis Institute of Technology, Pune</li> </ul>