**Chirag Shah**

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# Profile

I am a core member of the Research and Development team at Jupiter Electric Mobility (JEM). Prior to JEM, I worked at Log9 materials in the Aluminum Fuel Cell (AFC) and Battery Management System (BMS) teams.

At Sagar Defense Engineering, I was a part of the core R&D team which developed “SkyDock” – India’s first Drone in a Box solution for whichpatents are **granted** by multiple countries **(**[**US-11772819-B2**](https://patents.google.com/patent/US11772819B2/en?oq=US11772819+)**).**

I have done internships at ideaForge, IIT Bombay and Fractal.

**Kindly visit my website** [**chiragrshah**](http://chiragrshah.com/)**.com [20100525161651!Icon_External_Link](http://chiragrshah.com) where I have collated all my work.**

# Work Experience

## Deputy Engineer - Jupiter Electric Mobility (Oct/24 – Present)

Log9 Materials was acquired by Jupiter Mobility in October 2024, following which I was transferred to Jupiter Electric Mobility (JEM).JEM designs and manufactures commercial 4W EVs, battery packs for railway applications and Battery energy storage system (BESS).

My key roles and responsibilities are:

* Developed hardware/software prototypes for a load measurement system for cargo vehicles, and performed the PCB design review
* Researching Energy Management Systems (EMS) & topologies for BESS to support build v/s buy decisions
* Assisting in technically reviewing tenders for multiple BESS RFP’s
* Researched and analyzed BESS topologies to guide optimal system design for different use cases and tender specifications
* Led integration, testing and commissioning a 20kWh BESS system for Indian Railways
* Managing the technical specifications for a 720kWh BESS project.
* Collaborating with vendors (BMS, EMS, PCS, switchgear) and leading upcoming BESS integration/testing

## Associate Electronics Engineer - Log9 Materials (Aug/22 – Oct/24)

Log9 was a nanotechnology company pioneering advancements in li-ion chemistry and battery pack manufacturing.  
I was a core R&D team member in the **Aluminum Fuel Cell (AFC)** and **Battery Management System** **(BMS)** team.

### **BMS team:** Firmware Development (Jan/24-Oct/24)

Due to the downsizing of teams at Log9, I took over Firmware development for BMS implementation for 2 OEMs

* Firmware development for new features
* Integration and testing the BMS and battery pack for two 3W-OEMs
* Troubleshooting, bug resolution and testing
* Thermal management system prototype/test jig

### **AFC team:** Electronics System Development (Aug/22 – Dec/23)

* Leading electronics system development with a team of 2-3 team members
* PCB design reviews (fuel cell management system (FMS), power management system (PMS), slave FMS)
* Firmware development on STM32 for the FMS, PMS, slave FMS
* Electronics and power electronics integration and testing
* Filed **six patents** in the areas of fuel-cell management, power management and fuel-cell system design

## Embedded Design Engineer - Sagar Defense Engineering (May/19 – Jul/22) – Pune

### **SkyDock:** Electronics and System Development (May/19 – Jun/21)

SkyDock is a launching and charging station which keeps the UAV in ready-to-fly condition 24/7. After landing it automatically starts charging the UAV. Our work was **granted a patent** by US, Denmark, European Patent Office, Australia and Finland ([US-11772819-B2](https://patents.google.com/patent/US11772819B2/en?oq=US11772819+))

My responsibilities as a core R&D team member included

* Conceptualized the prototype, designed, and built hardware for all electrical and electronic systems
* Developed, tested and deployed the embedded firmware for BMS, charging pad and SkyDock controller
* Designed the complete PCB set (switching DC-DC converter, battery management system, charging management system etc)
* End-to-end assembly of the PCBs, BOM generation, vendor negotiations for procurement
* Lead a team of 3-4 people to produce SkyDock

### **Other Projects:** Assembly & PCB Design

* Set up the SMT assembly process – pick and place machine programming, solder paste handling and printing, reflow profiling, cleaning and inspection
* Assembled PCBs for UAV subsystems such as flight controllers, power distribution, gimbal control etc
* Designed and assembled various PCBs for power conversion, communication interfaces, and control modules

# Internships – (2015 – 2019)

## ideaForge: Design & Build of Engineering Validation Prototype (10/Dec/2018 – 18/Jan/2019) [20100525161651!Icon_External_Link](http://chiragrshah.com/portfolio/ideaforge-internship/)

* Designed the CAD model on Fusion 360, fabricated the parts (3D printing/CNC) and assembled the prototype
* Designed and built the electronics setup and firmware to drive the mechanical assembly

## Fractal Analytics: Implementation of Room Occupancy System (11/Jun/2018 - 13/Jul/2018) [20100525161651!Icon_External_Link](http://chiragrshah.com/portfolio/real-world-implementation/)

* Occupancy monitoring system across 9 meeting rooms running 24x7
* Designed to consume a low standby current (88µA) for battery operation. The devices connect to each other via a network of RF trans-receivers. Data was sent to AWS IOT core and then pulled into DynamoDB

## e-Yantra IIT Bombay: Formation Control of Multiple Swarm Robots (22/May/2017 - 7/Jul/2017) [20100525161651!Icon_External_Link](http://chiragrshah.com/portfolio/formation-control-of-multiple-swarm-robots/)

7 weeks residential internship at the Embedded and Real-Time Systems Lab advised by **Dr Kavi Arya, IIT Bombay** under the e-Yantra Summer Internship 2017 program

* Developed algorithms to control groups of robots and make different swarm formations
* Developed the embedded-C program for the swarm robots (ATmega-16)

# Projects/Achievements

## Coursera: Algorithms for Battery Management Systems Specialization: Oct 2020 [20100525161651!Icon_External_Link](https://www.coursera.org/account/accomplishments/specialization/certificate/37BN6FA5RMSL)

5-Course Specialization dealing with batteries, battery management systems (BMS) and algorithms for BMS

## Constant Current Load PCB: 2018 [20100525161651!Icon_External_Link](http://chiragrshah.com/portfolio/constant-current-load-circuit/)

A microcontroller-based load which draws a programmable constant value of current to test power sources. This gave me an end-to-end system development experience

## e-Yantra Robotics Competition IIT Bombay 2016: 1st Place (Out of 167 teams) [20100525161651!Icon_External_Link](http://chiragrshah.com/portfolio/eyantra-launch-a-module/)

Designed and built the robotic arms; programmed the Firebird-V robot in embedded-C (ATmega-2560)

# Technical Skills

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| * Embedded systems design & development * Prototype to minimum viable product * Schematic design and circuit design * PCB and flex PCB designing and assembly * Embedded-C programming (AVR, STM32) * Peripherals such as SD Card, RTC, Displays * Communication protocols: CAN, UART, SPI, USB | * Switching and linear power supply design * BOM generation and procurement * Analog & digital circuit design (ADC, Op-amps, MOSFETs) * Lab equipment (Oscilloscopes, Electronic Loads, DMMs) * Electrical systems development and troubleshooting * CAD (Fusion 360) and 3D printing |

# Education

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| 2015 – 2019 | Electronics Engineering - Sardar Patel Institute of Technology | 8.37 CGPA |
| 2013 / 2015 | SSC / HSC | 87.5% / 82.31% |

# Co-curricular activities

* Conducted electronics troubleshooting competition for 75 students
* Conducted multiple hands-on workshops on PCB design, microcontrollers and embedded-C programming

# Other Interests

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| * Certified PADI advanced open water scuba diver | * Sailing and windsurfing |