Shubham S. Sarwate

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***Objective**: To obtain a Summer 2018 internship in Internet of Things, Networking and Machine Learning.*

Education

Texas A&M University — *College Station, TX*

Master's in Computer Engineering — *Dec. 2018*

CGPA : First semester graduate student.

BITS Pilani University — *Goa, India*

Bachelor's in Engineering (Hons.) in Electrical and Electronics Engineering — *May 2017*

- Concentration in Networks, Embedded Systems and Internet of Things.
- Undergraduate thesis at Carnegie Mellon University & Google.
- CGPA : 3.6/4

Technical Proficiency

Programming languages:	C, C++, C#, Python, php , HTML, JavaScript, Java
Simulation Softwares:	MATLAB, Cadence Virtuoso, Proteus, PSpice
Embedded Platforms:	Raspberry Pi, AVR, Arduino, DSP Board DSK6455/6713, PSoC CY8c29, TI Sensor Tag CC2550

Bachelor Thesis

Smart Actuation System for large scale IoT — *Pittsburgh, PA & Mountain View, CA*

Supervisor: Dr. Anind Dey, Director, HCII, Carnegie Mellon University — *Jul. 2016 - Dec. 2016*

- Developed an interactive and smart device actuation system which shall actuate devices according to the behavioral routines of the user.
- Employed **unsupervised learning** using **Google Cloud ML** and **Node Red** to learn the behavioral routines of the user and suggest rules that the user's devices need to follow.
- Presented and deployed the systems at the **Googleplex, Mountain View** and **Carnegie Mellon University.**

Selected Projects

Lockheed Martin Roll On/Roll Off Challenge — *Lockheed Martin & BITS Pilani*

Team Lead — *Aug. 2014 - Mar. 2016*

- Led an interdisciplinary team for designing a payload for **Lockheed Martin's flagship plane C-130J** in developing a deployable payload targeting humanitarian relief and rescue in case of mass relocation.
- Developed an **MPPT (Maximum Power Point Tracking)** algorithm using 2 staged PID regulator to improve efficiency of Solar Panels in the Hybrid power system.
- Received a funding of **$25,000** for the first two stages of development.

Design and Development of an AUV (Autonomous Underwater Vehicle) — *BITS Pilani*

Mentor: Prof. K.R. Anupama, Senior Professor, BITS Pilani — *Aug. 2015 - Dec. 2015*

- Designed an AUV for pipeline monitoring and algae detection.
- Interfaced the actuators and the data acquisition system with the on-board **Beaglebone** micro-controller.
- Worked on the **closed loop control system** to provide desired PWM outputs to individual thrusters

Design of low cost implementation for LiFi (Light Fidelity) [*Project Video*] — *BITS Pilani*

Mentor: Prof. G. Raghurama, Director, BITS Pilani — *Jan. 2016 - May 2016*

- Implemented a single LED-photodiode based inter-computer file transfer system and analysed the effects of **Gaussian Noise,Attenuation, Multipath effects** on the VLC(Visible Light Communication) system using **Simulink(MATLAB)**.
- Successfully implemented serial inter-computer data transfer at a speed of **25 Kbps** satisfying the **IEEE 802.15.7** standards for outdoor VLC.

Development of SDR based receiver for IRNSS. — *BITS Pilani*

Team Lead — *Jan. 2017 - Mar. 2017*

- Designed a **Software Defined Radio (SDR)** based receiver for signals from the satellite constellation of the **IRNSS (Indian Regional Navigation Satellite System)**
- Developed the decoding logic for the IRNSS signals which are modeled on the **GNSS (Global Navigational Satellite)**
- Programmed the SDR using NI-Lab View and created the decoding logic and filters in **MATLAB**

Project Anna : Voice controlled Dorm-room automation [*Project Video*] — *BITS Pilani*

Independent project in Internet of Things — *Jan. 2014 - Mar. 2014*

- Prototyped an **Arduino** based home automation system for remote actuation of devices in dorm rooms using **C#**.
- Developed own custom grammar for voice actuation of devices capable of handling commands such as Study mode.

Control of robot vehicle over the LAN network *BITS Pilani*

Independent project in Internet Of Things *Jan 2014 - May 2014*

- Developed a LAN-controlled-vehicle for unmanned surveillance.
- Enabled tele-operation over the Internet to expand robot exploration radius and increase operator safety by isolation.
- Camera mounted **Raspberry Pi** for control of motors and acting as a gateway to the Internet.

Pedestrian Recognition System *BITS Pilani*

Independent Course work project in Machine Learning *Dec. 2013 - Feb. 2014*

- Developed a **Haar feature** based pedestrian recognition from still images.
- Achieved an accuracy of **93%** in detection of human skeleton from **INRIA** Person dataset

Teaching Experience

Introduction to Electronics and Robotics *BITS Pilani*

Chief Instructor *Aug 2015 - Dec 2015*

- Delivered **lectures** on fundamentals of robot control and design to a class of **65 students** over 20 lectures.
- Taught basics of Digital and Analog electronics, C Programming, Architecture of AtMega series Micro controllers with a Capstone project "**Over-the-LAN surveillance bot**"

Celestia Club, BITS Goa *BITS Pilani*

Sub-Coordinator *Sep 2014 – Aug 2015*

- Revived the astronomy club to a strong team of 45 enthusiasts at present by promoting love for astronomy on campus.
- In charge of the weekly astronomical observation sessions.
- Part of the editing team of the annual magazine of the club.

Institute of Electrical and Electronics Engineers (IEEE) *BITS Pilani*

Core Student Member *Jun. 2015 - Dec 2015*

- Core member of **IEEE Students chapter** BITS Goa.
- Led the project team on Li-Fi under the student chapter.
- Proposed various networking activities to raise awareness of latest events Electronics in the university.

Extracurricular and Teaching

- **Chief Instructor** for the course on Introduction to Electronics and Robotics in BITS Pilani. Delivered **20 lectures** on fundamentals of robot control and design to a class of **65 students**
- **Winner** of Analog Tussle, Quark Tech-Fest, BITS Pilani (50+ teams)
- **Second Runner-up** of Matmania, Quark Tech-Fest, BITS Pilani (30+ teams)

Relevant Courses

- Operating Systems
- Computer Communication and Networks
- Software Engineering
- Distributed and Cloud Computing
- Communication Systems
- Data Communication and Networking
- Satellite Communication
- Mobile Telecommunication and Networking
- Microprocessors and Interfacing
- Digital Signal processing