TANMAY CHATURVEDI

GitHub: github.com/TanmayChaturvedi1

Email: tanmay.chaturvedi@colorado.edu | **Contact:** (720) 621 1115 | **LinkedIn:** linkedin.com/in/tanmaychaturvedi

EDUCATIONAL QUALIFICATIONS

University of Colorado Boulder, Colorado | M.S. in Electrical Engineering (Embedded Systems) **GPA: 4.0/4.0**

Courses: Principles of Embedded Software, Embedded Systems Design, IoT Embedded Firmware Expected - May 2020

LNM Institute of Information Technology, Jaipur, India | B. Tech. in Electronics and Communication Engineering **GPA: 8.07/10.0**

Courses: Microprocessors and Interfaces, Digital Communication, Automotive Electronics Graduated - July 2016

PATENT

"Optical sensor, sensor arrangement and method for sensing", US Patent App. 15/923,609, 2018

WORK EXPERIENCE

Project: "High Precision Wireless Optoelectronic Sensing System" *(Sep'16-Aug'18)*

[Research Engineer at Nanyang Technological University (NTU), Singapore]

- Co-invented first-of-a-kind Linux-based wireless sensing system for physical parameters monitoring and smart building applications
- Built 2 prototypes, increased system life from 7 to 140 days through low-power circuits, high SNR and data transmission using LoRa
- Interfaced optical sensors with Raspberry Pi, ATMega328P, built a LabVIEW app and automated sensor data acquisition using Python

Project: "Smart City Implementation through Wireless Sensor Networks" *(Dec'15-May'16)*

[Internship: Singapore Univ. of Technology & Design - Massachusetts Institute of Technology (SUTD-MIT) Int'l Design Centre, Singapore]

- Developed Seeeduino-based sensor nodes and interfaced it with environmental sensors
- Designed Sensor-Fusion algorithms, presented high/low-level insights of urban mobility and space utilization
- Automated the sensor data processing, analysis, and visualization process by developing a MATLAB-based application

Project: "MAC Protocol Design and Programming for Massive Wireless Sensor Network" *(May'15-Jul'15)*

[Internship: Singapore University of Technology and Design (SUTD), Singapore]

- Implemented a scalable MAC Protocol for IoT devices on RFBee radio transceiver that outperformed TDMA by 41%
- Programmed the firmware of RFBee using Embedded C and interfaced with Seeeduino microcontroller for protocol testing

PROJECTS

Project: "Over-The-Air (OTA) Firmware Update and Hardware Programming via Wi-Fi" *(Oct'18-Nov'18)*

- Implemented cloud-based OTA firmware updates on TI MSP432 using TI CC3120 Wi-Fi processor and displayed on a graphical LCD
- Established inter-board communication between Texas Instruments MSP432 and Cypress PSOC microcontroller using SPI protocol

Project: "Multi-platform (Linux/FRDM-KL25Z) Circular Buffer implementation with interactive UART-based utility" *(Oct'18-Nov'18)*

- Built custom Makefile for Linux and FRDM-KL25Z microcontroller platform, and cross-compiled using ARM-GCC toolchain
- Developed an interrupt-driven UART communication driver using bare-metal firmware programming in Embedded C language
- Automated long-randomized unit testing using the CUnit testing framework for Circular Buffer and UART implementation

Project: "Development of Low-Cost Automotive Infotainment System" *(Jun'13-May'15)*

- Innovated and prototyped an In-Vehicle Infotainment System on Raspberry Pi microcomputer with on-board vehicle sensors
- Developed Python scripts to communicate with vehicle's ECUs and extracted sensor data from the On-Board Diagnostic (OBD-II) Port
- Researched on vehicle immobilizer system, optimal gear-shifting pattern, eco-driving assistant and human-vehicle interaction

TECHNICAL SKILLS

Programming: C, Embedded C, Python, Assembly

Software/Tools: TI Code Composer Studio, MATLAB, NI LabVIEW, KiCad, Kinetis Design Studio, XCTU, CodeBlocks, Xilinx ISE, GNU Make

Hardware: TI MSP432, Raspberry Pi, FRDM-KL25Z, Beagle Bone, 8051, ATMega328P, Arduino, Xilinx FPGAs, MS Kinect, XBee

Protocols: I2C, SPI, UART **Version Control:** Git **Testing Framework:** CUnit **Operating Systems:** Windows, Linux

Others: Logic Analyzer, OBD-II, Oscilloscope, PCB Schematics, Soldering, Hardware/Firmware Debugging, Prototyping

PUBLICATIONS

- "Human Sensing Network Architecture and Challenges in Smart Cities," Nova Science Publishers, USA, 2017 [Book Chapter]
- "On the Design of MAC Protocol and Transmission Scheduling for Internet of Things," IEEE TENCON, Singapore, 2016 [Conference]
- "User Interactive and Assistive Fleet Management and Eco-Driving System," IEEE TENSYMP, Ahmedabad, India, 2015 [Conference]

LEADERSHIP EXPERIENCE / ACHIEVEMENTS

- **Winner [Particle.io Best Hack Prize]** – HackCU Hardware Hackathon "Phase" 2018, University of Colorado (CU), Boulder (Nov'18)
- **Graduate Committee Member** – Engineering Excellence Fund, Engineering & Applied Science, CU, Boulder, (2018 – Present)
- **Exhibitor and Technical Presenter** (Singapore) – IoT Asia 2018 event; TECHINNOVATION 2017 event; IEEE TENCON Conference 2016
- **Active Member** – Ananda Marga Yoga Society, Singapore; a non-profit social service NGO (May'15-Jul'18)
- **Quarter-finalist** – Texas Instruments India Innovation Challenge (TIIC-2015)