

Kaustubh Agarwal

SOFTWARE DESIGN ENGINEER

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"An ambitious young professional interested in wireless technologies, computer networking and software development. I am looking for a challenging, fast-paced environment to utilize my written knowledge and develop my skill-set further"

Education

Technische Universiteit Delft

Delft, Netherlands

MASTER OF SCIENCE IN EMBEDDED SYSTEMS, TRACK: SOFTWARE AND NETWORKING

Sep 2018 - Sep 2020

- Thesis: Improving Zigbee Performance of a Wireless Lighting System in a Smart Home Environment
- Courses: Wireless Networking, Machine Learning, Data Analysis, Embedded Software, Network Security, Software Defined Networks/NFV, Real-Time Systems, Network Science and Modeling, Cellular networking.

Jaypee Institute of Information Technology

Noida, India

BACHELOR OF TECHNOLOGY IN ELECTRONICS AND COMMUNICATION ENGINEERING

Aug 2012 - June 2016

- Courses: Telecommunication Networks, Digital and Analogue Communication, Graph Algorithms, Data Mining, Micro-processors and Controllers.

Skills

Programming Languages Python, C/C++, Bash Shell Scripting

Wireless Technologies Zigbee (IEEE 802.15.4), Wi-Fi (IEEE 802.11 b/g/n), GSM(2G), UMTS(3G), LTE(4G)

Network Tools And Protocols Wireshark, Tcpdump, Internet Protocol Suite (TCP/IP), Iperf3, aircrack-ng

Software Tools/Version Control Git, Matlab, Kibana/Elasticsearch, Docker, Apache Kafka, ROS, OpenCV

Hardware SoC EFR32MG12 Mighty Gecko, Raspberry pi, Arduino

Operating System Linux, OpenWrt, Windows

Linguistic Skills Dutch(Beginner/In-progress), English(Professional Working Proficiency), Hindi(Native)

Experience

ASML

Eindhoven, The Netherlands

SOFTWARE DESIGN ENGINEER

Nov 2020 - Present

- Working in the Design and Engineering (Metrology department) as a software engineer focusing on Image quality
- Implementing Calibration and performance SW to enable Lens Set-up for the ASML DUV machine family

SIGNIFY (formerly Philips Lighting)

High Tech Campus, Eindhoven, Netherlands

IoT R&D INTERN (MASTER THESIS PROJECT)

Nov 2019 - Sep 2020

- Analyzed and improved the overall performance of the Philips Hue network (Zigbee) under Wi-Fi interference
- This included developing a SDN like centralized system design and a dynamic rate shaping algorithm for a Linux Wi-Fi router to allow Zigbee a better chance to access the shared radio channel using iptables and tc Linux packages

ERICSSON GLOBAL INDIA

Noida, India

RADIO ACCESS NETWORK ENGINEER

Sep 2016 - Mar 2018

- Tested, configured, integrated and troubleshooted RAN domain nodes for the largest Telecom operator in India(Airtel)
- Logically defined the network nodes in AXE- Ericsson's Radio platform
- Optimized 2G, 3G and 4G network as per requirement of the customer and emergencies
- Assisted in automating all major procedures required for integrating and managing Ericsson RAN nodes

ROBOTECH LABS

Noida, India

TECHNICAL ASSOCIATE INTERN

Jun 2015 - Jul 2015

- Researched about GNU Compiler Collection to develop a visual interface by utilizing a visual block JavaScript library to make an interface for Arduino using Blockly
- Developed a home automation system on Android, web and Arduino platforms from the ground up within a one-month deadline

Academic Projects

Wi-Fi Access point Data extractor (part of - Responsible IoT Data Research) (September 2019) Developed a Python application that collects data from the Cisco Prime infrastructure of TU Delft, processes it, encrypts sensitive data on a daily/monthly basis and streams it through the Apache Kafka pipeline to be readily available for researchers in real-time. Docker was used to manage the back-end.

Software for Self Driving car in ROS environment using OpenCV, Point Cloud libraries and C++ (June 2019) Wrote the software for a self-driving car to detect and follow a black line using OpenCV library and reach the finish point. Point Cloud library was used to steer away from pedestrians in the gazebo simulation.

Quad-Rotor stabilization system using ARM M0 processor and GY-sensor module (June 2019) Developed the software for the drone embedded system using C in a team of Four. The finished system could stabilize itself on all three roll, Pitch and Yaw axis using Butterworth and Kalman filter. Data logging facility and GUI in Javascript was also developed.

Passive Sniffing for analysis of ISM Channel Distribution in the city of Delft, Netherlands (March 2019) Collected wireless data from different locations such as residential area, Industrial area, University campus, Hospital, and city center using Wire-shark and airodump-ng utility. Studied the data in terms of channel distribution among 2.4GHz and 5GHz bands, channel hopping, PHY types distribution, and compared the data from the Wigle database to record a shift towards 5 GHz bands.

Rho-Vex Processor Optimization (January 2019) Used a parameterizable VLIW soft-core processor (VEX) to determine a suitable architecture for running four benchmark C programs. Conducted extensive Design Space Exploration over a very large search space to obtain the most efficient processor design with a trade-off between performance, area utilization, and power consumed by using Simulated Annealing.

Localization in an AdHoc Network using Arduino Platform and ESP32 chip (October 2018) Programed two cars forming an AdHoc Network over WiFi and use RSSI to reliably estimate the position and movement of the other to imitate a swarm configuration.

Research and Implementation of Application Layer IoT Protocols (June 2016) Completed a literature survey on various Application layer Protocols(MQTT, XMPP, COAP, AMQP), including a classification of protocols on basis of architecture models, security, scope, QoS, latency and general applications. The final presentation included a working implementation of MQTT chat application and a project named "World Mood Lamp"- a lamp that changes color according to the mood of the person. Data was uploaded to IFTTT channels and ThingSpeak IoT channel and visualized on a mobile app.

Object detection and tracking using python OpenCV (June 2015) Worked on Optical Character Recognition(using Tesseract library) and haar cascade classifiers to achieve Face Tracking, color tracking, license plate detection using Voila-Jones Framework.

Extracurricular Activity(Recent)

2022	Participant , Won 3rd place at a Football Tournament called OLYMPICA for ASML	Utrecht, Netherlands
2019,2020	Volunteer , Volunteer at the 2019 and 2020 edition of the Things Conference, by The Things Network(Biggest conference on LoRa)	Amsterdam, Netherlands
2018	Participant , The Internet of Things and the Future of Design: IoT Symposium hosted by Industrial Design Engineering Faculty at TU Delft	Delft, Netherlands
2017	Participant , Achieved a score of 322/340(167/170 in Quantitative skills) in GRE	ETS
2017	Participant , Completed a course titled 'Introduction to the Internet of Things and Embedded Systems', University Of California, Irvine	Coursera
2016	Most Followed , One of the highest followed community member in the world on Hackster.io from 2016- Present	www.Hackster.io
2015	Chief Organizer , Organized Inter University Football tournament as part of the University Sports Fest	Noida,India
2014	Volunteer , Taught underprivileged kids as part of an NGO, 'UMEED- A Drop Of Hope'	New Delhi, India

Interests

- Watching, playing and discussing about Football
- Traveling and exploring
- Reading novels, Currently - Outliers by Malcolm Gladwell
- Cooking new food recipes occasionally
- Enjoying all kinds of music(primarily Pop Music-(Coldplay, Maroon 5))