SUMAN MAROJU

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github link: https://github.com/Maroju100/Resume/blob/master/Projects.pdf

PROFESSIONAL SUMMARY

Software engineer with 5+ years of experience in reliable software and hardware development to solve a variety of problems in the field of IoT, sensor networks, BAN (wearables) and AI/ML based intelligent systems. Hands on experience with mobile (Android) and web application development with good knowledge of embedded systems, bigdata and cloud technologies.

SPECIFIC EXPERTISE

- Overall 5+ years of SDLC experience in C, C++, Java with solid experience of Object Oriented Design and Programming.
- 3 + years of experience in end to end IoT software and hardware development for the Railway Project titled "**Development of Railway bridge health monitoring using WSN**"
- Proficiency in Linux/Unix-like operating systems with good development experience on Raspberry Pi, Arduino platform with bluetooth, Zigbee(802.15.4), WiFi and cellular (GSM, 4G) connectivity over IoT protocols (MQTT, CoAP, XMPP).
- Experience in integrating various sensors such as water level, temperature, accelerometer, strain (Microstrain), proximity, color and video sensors for real time series sensor data collection and storage.
- Good knowledge of big data technologies like Hadoop, MapReduce, Spark, Kafka, SDN/NFV for sensor data processing.
- Extensive hands on with sensor data processing and Machine learning techniques using tools like Matlab, Weka and Tensorflow (Deep learning API).
- Experience in building web based dashboards and graphics visualizations of sensor data and SMS based alerting.

TECHNICAL SKILLS

Programming(Proficient): C, C++, C#, Java, Matlab, HTML/CSS, JavaScript
Programming(Intermediate): Android, Python, QT, PHP, Node.js, React, Meteor, Assembly, Flask, Wordpress, Git
Operating Systems : Windows, LINUX, DOS, Raspbian, Android, VMware, Docker, Heroku, AWS, GoogleCloudPlatform
Hardware & Protocols: Raspberry Pi, Arduino, PIC, ATMEL, BLE, Bluetooth, WiFi, MIMO (WARP), SPI, I2C
API & Tools: Tensorflow, WEKA, IBMWatson, OpenSceneGraph, DirectX, OpenDaylight, Mininet, CoAP, MQTT, XMPP, WebRTC, Asterix, OpenMP, OpenCV, CUDA, LabVIEW, NS2/NS3, ANSYS, SAP2000, ArcGIS
Database: MySQL, HBase, Cassandra, Hadoop, TSDR, Spark, Kafka

PROFESSIONAL EXPERIENCE

Graduate Researcher at Northwestern University-HABits Lab Affiliated With Feinberg School of Medicine & Northwestern University McCormick School of Engineering (Machine learning & Wearables) (2017 Summer & 2018 Winter)

- Developed an energy efficient hierarchical **wearable sensing system** for feeding habit monitoring of users. Programmed a smartwatch based on **android platform** to detect hand based feeding gestures and trigger RaspberryPi wearable camera. Implemented **machine learning** techniques using **tensorflow and OpenCV** for the CNN based training for food classification.

Graduate Researcher at Northwestern University (Artificial Intelligence) (2017 Fall)

- Worked in a team of 3 with Kellogg counterparts to develop **AI based optimal team allocation system** based on **IBM Watson** personality insight API. Developed a web interface and grouping algorithm in python and Flask.

Graduate Researcher at Northwestern University (Networks/Security) (2016 Fall)

- Worked in a term project to setup **SDN** openflow switch with opendaylight as controller. Time series data traffic stats were generated and stored using TSDR plugin with Hbase, Cassandra and Hadoop configured at Linux OS.
- Worked in **MIMO** based wireless networks security project with simulations on WARP boards and Matlab at Rice Uni.

Project Officer at RDSO, Indian Railways (Wireless Sensor Networks) (2014 February - 2016 September)

- Worked in a project titled **"Development of Railway Bridge Health Monitoring System with Wireless Sensor Networks".** Developed an **energy efficient event based WSN system** for automated data collection, transfer and management of sensor data for health monitoring of Indian Railway Bridges. Implemented **machine learning** and **signal processing** techniques for analysis of sensor data.

Project Officer at Intellisys Pvt. Ltd (Video Conferencing Software) (2013 May - 2014 January)

- Worked in a project titled **"Software and Hardware integrated approach for Next generation Video conferencing"** funded by Intellisys Technologies & Research Ltd., India for the development and optimization of H.264 based video codec.

Junior Research Fellow at DRDO, India (Defense Organisation) (2012 January-2013 April)

- Worked at Communication Directorate of India's premier missile test range called ITR for the upgradation and development of defense communication equipment (Routers, Switches, Polycom, Satellite modem in NI LabVIEW, VOIP based on asterisk server.

Software Engineer, Vizexperts. Pvt. Ltd., Gurgaon, India(Graphics Startup) (2010 October – 2011 November)

- Worked in a team of 5 SDEs for the development of **3D GIS** (Geographic information system) software called "INDGIS3D" (Similar to ArcGis or GoogleEarth) for CAIR, DRDO, to assist Indian Army planning's.
- Worked in a team of 5 SDEs for a remote 3D oil exploration software called "VSite3D" outsourced by Landmark Graphics, Halliburton, USA.

EDUCATION

Masters in Computer Science, Northwestern University, Evanston, IL. **(2016-2018 March)**

Master in Electronics & Electrical Communication Engineering, Indian Institute of Technology, Kharagpur, India (Specialization- Systems & Networking) **(2013-2016)**

Bachelor in Electronics and Telecommunication Engineering, BPUT, Orissa, India**. (2005-2009)**

PUBLICATIONS:

Soumendu Kumar, Maroju Suman, Raja Datta, and Prabir Kumar Biswas. **"Power efficient event detection scheme in wireless sensor networks for railway bridge health monitoring system."** In Advanced Networks and Telecommunications Systems (ANTS), 2014 IEEE International Conference on, pp. 1-6. IEEE, **2014.**