Sagnik Basu

Personal Data

Date of Birth:	20 March 1995
Address:	Bengaluru, Karnataka
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Education

2013-2017 B.Tech. (8th semester), Electronics and Communication Engineering, ,
National Institute of Technology Rourkela
Thesis:Design of Intelligent Wearable Device based on Cognitive Radio and IoT
CGPA: 8.00/10.0

Work experience

June 2019- Current Senior Engineer at Samsung Research Institute-Bangalore
Area :- Computer Vision for ADAS systems
Develop computer vision, linear algebra and neural network kernels for Samsung Exynos Visual Api (SEVA) for Automotive chipsets.Implement Structure from Motion pipelines like Optical Flow (Lucas-Kanade and Warping based), Block Singular Value Decomposition etc. Study and Develop Neural Network based solutions for Optical Flow and Semantic Scene Segmentation. Key Performance Indicator is to match the performance of top 5 in the KITTI dataset.

Sep 2017- June 2019 Software Developer at Visteon
Area :- ADAS Middleware / Autonomous Driving
Part of team to develop Software Stack for Drivecore Runtime middleware platform (with Linux/QNX support) for Autonomous Driving. As a part of the client library, wrote on a unified Time Source layer to be used by all Runtime-based nodes. Designed/Wrote the IDL parsing and code generation tool for Runtime complaiant messages in python. Develop user space driver interface for Lidar(Velodyne and Quanergy), GNSS/IMU (Novatel and Oxford) sensors in C++. Develop a QT and python based tool for visualization and validation of automotive sensor data. Develop algorithm nodes in C++ with input from CV/AI team for lidar based lane detection in highway roads. Familiar with ISO26262 and MISRA-C/C++ guidelines, ASIL levels, IBM RTC/Git source-control tools. Knowledge of networking protocols like RTPS, TCP/UDP, websockets etc.

May-July 2016 Research Intern at Space Applications Centre,ISRO,Ahmedabad,
Area :- On-board Digital Signal Processing Systems
RTL design of channel estimation algorithm for DVB-RCS satellite protocol.Testing was done in Xilinx Virtex 5, USRP B210 and Zynq based FPGA development kits

May-June 2015 Research Intern at IIT Roorkee,
Area :- Image processing and Machine Learning
Study of fundamentals of image processing and Machine Learning.Implemented an algorithm on fuzzy classification of Breast Cancer Data-set, in Matlab

Research Projects

September 2017-April 2017

Intelligent Wear-ables Based on IoT and Cognitive Radio Technology
Department of Electronics and Communication,NIT Rourkela

Proof-of-Concept wearable system based on IEEE 802.11-af (TV White Space) specifications. Worked on ARM8(Raspberry Pi 3) and ARM11 (MediaTek Linkit One) processors and NI USRP B210(Software Defined Radio) for real time applications.Spectrum Sensing for Cognitive Radio implemented using Deep Neural Network in python and GnuRadio.The project is funded by IEDC, India.It was also chosen by our department to participate in our Institute's Gold Medal Award for best B.Tech Project

January 2015-April 2017

Vision based Path Planning of a Autonomous Underwater Vehicle
Department of Mechanical Engineering, NIT Rourkela

Designed the path planning module of the AUV using stereo camera and Inertial Navigation sensors.Study and develop PID based control algorithms for stable motion and sensor fusion for perception. All coding done on C++, ROS and Qt platform and were optimised for GPU using CUDA-C..Our vehicle participated in the NIOT SaVe competition 2017. Conference Paper on our vision system was submitted and got selected at IEEE ICSIPA 2017,Malaysia

May 2015-April 2016

Development of Embedded System for a Balloon Satellite
Department of Electronics and Communication,NIT Rourkela

I was in charge of developing the embedded Sensor and Communication Subsystem of the Balloon Satellite.I worked on a 900 Mhz ZigBee trans-receiver known as Xtend and ARM based microprocessors on UDOO Single Board Computers.Also, a Python based software stack was developed to monitor the critical communication protocols like image transfer, sensor data transfer etc

Technical Skills

Programming Languages:	C/C++, Python,, Rust
Simulation Softwares:	Multisim, Matlab, NI LabView, GNU Radio
Operating Systems:	Linux(including Automotive Grade linux), QNX RTOS.
Embedded System Software:	Arduino, Keil, Xilinx Vivado/ISE, TI Code Composer Studio
Source / Version Control :	git, IBM Rational-Team-Concert, Jira, Polarion.
Other :	ROS, OpenCV, Caffe, Qt, CUDA

Courses Completed

- **THEORY** :- Basic Electronics , Signals and Systems, Analog Electronics, Semiconductor Devices, Digital Electronics, Computer Vision,Advanced Programming Skills,Microprocessors and Micro controllers,Digital Signal Processing,Embedded System Design,Analog and Digital Communications,Control Systems,Digital VLSI Design,Electromagnetic Theory,Embedded Computing System,Mobile Communications,Soft Computing,Computer Networks
- **Practical** :- Analog Electronics lab, Circuit Simulation Lab,Electrical Machines Lab,Thermodynamics Lab,Analog Communication Lab,Digital Signal Processing Lab,Microprocessor Design Lab,Digital Communications Lab,VLSI Design Lab,Mobile Communication Lab,Soft Computing Lab,Re-configurable IC Lab,Digital Radio Design Lab

References

- **Dr. Shirshail Hiremath** :Assistant Professor, Electronics and Communication Department NIT Rourkela
  hiremaths@nitrkl.ac.in.
- **Dr. Hara Prasad Roy** :Associate Professor, Mechanical Engineering Department,NIT Rourkela
  hroy@nitrkl.ac.in

Declaration

All the information mentioned in the resume are correct to the best of my knowledge.

Place : Bengaluru, Karnataka
Date : 13/05/2020