Sagnik Basu

Personal Data

Date of Birth:	20 March 1995
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Education

2013-2017 — B.Tech. (8th semester), Electronics and Communication Engineering, , **National Institute of Technology Rourkela**
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. Study and Develop fixed point quantized Neural Network-based solutions for Optical Flow on DSP architectures. Key Performance Indicator is to match the performance of the top 5 in the KITTI dataset.

Sep 2017- June 2019 — Software Developer at
Area :- ADAS Middleware / Autonomous Driving
Part of the team to develop Computer Vision Software Stack on Drivecore platform (with Linux/QNX support) for Autonomous Driving. Develop CNN based algorithm nodes with input from CV/AI team for lidar-based lane detection in highway roads. Optimize the algorithm using fixed-point quantization and tuning of hyper-parameters.

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

A 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.

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 a stereo camera and Inertial Navigation sensors. Study and develop PID based control algorithms for stable motion and sensor fusion for perception. All coding is done on C++, ROS, and Qt platform and were optimized for GPU using CUDA-C.Our vehicle participated in the NIOT SaVe competition 2016 and Singapore AUV competition, 2018. 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, 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, Tensorflow, Ipython

Teaching Experience

- **CS313 Operating System Lab** Preparation and evaluation of assignments
- **EC375 Digital Signal Processing Lab** Evaluation of final submission of project work.

References

- **Dr. Shirshail Hiremath** :Assistant Professor, Electronics and Communication Department NIT Rourkela
  hiremaths@nitrkl.ac.in.
- **Dr. Samit Ari** :Associate Professor, Electronics and Communication Engineering Department,NIT Rourkela
  sari@nitrkl.ac.in
- **Mr. Satheesh PK** :Associate Technical Director, System-LSI, Samsung Research Institute-Bangalore
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