# Sagnik Basu

## Personal Data


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| Date of Birth: | 20 March 1995 |
| Address: | Bengaluru, Karnataka |
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| GitHub name: | sagniknitr |


## 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
*Sub-Group :- System-LSI/Multimedia*
Contribute to computer vision and neural network software stack for Exynos Mobile and Automotive SoC's . Successfully implemented Structure from Motion pipelines like Optical Flow (Lucas-Kanade and Dense Inverse Search based), Block Singular Value Decomposition, Local Motion Estimation etc. on multi-core DSP. Currently contributing to enabling Neural Network models on Exynos Neural Processing Unit.

*Sep 2017- June 2019* — Software Developer at Visteon Corporation
*Sub-Group :- Advanced Driving Assistance Systems*
Part of the team to develop Computer Vision Software Stack on Drivecore platform (Qualcomm SNPE amd Hexagon DSP) for Autonomous Driving.Successfully deployed lidar and camera based highway Lane detection system and Traffic Sign Recognition system for a major Chinese OEM. Demonstrated strong understanding in optimizing training and inference of CNN architectures like network compression, architecture search, quantization etc.

*May-July 2016* — Research Intern at Space Applications Centre,ISRO,Ahmedabad,
*Sub-Group :- 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.Gained exposure to FPGA development cycle and tools like Xilinx Vivado, ChipScope etc.

*May-June 2015* — Research Intern at IIT Roorkee,
*Sub-Group :- Image processing and Machine Learning Lab*
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.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 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

## Achievements

Bachelor Thesis selected to represent Electronics department for Best Project Award
Quarter Finalists in Texas Instrument's India Innovation Challenge 2017
Third and Second positions at Autonomous Underwater Vehicle Competitions.

## Technical Skills

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| Programming Languages: | C/C++, Python, Rust, TypeScript |
| Simulation Softwares: | Multisim, Matlab, NI LabView, GNU Radio |
| Operating Systems: | Linux, QNX RTOS. |
| Embedded System Software: | ARM Keil, Xilinx Vivado, Synopsys ChessDE |
| Source / Version Control : | git, IBM Rational-Team-Concert, Jira, Polarion. |
| Other : | ROS, OpenCV, Caffe / Torch, Qt, CUDA, Tensorflow, Halide |

## 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
  hirematths@nitrkl.ac.in.
- **Mr. Satheesh PK** :Associate Technical Director, System-LSI, Samsung Research Institute-Bangalore
  satheesh.pk@samsung.com

## Declaration

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

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