SABYASACHI SAHOO

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EDUCATION

Indian Institute of Science (IISc), Bangalore	2014 - 2016
M. Tech. Computational Science	CGPA: 6.3 / 8
Department of Computational & Data Sciences (CDS)	(top 5)

Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat	2010 - 2014
Bachelor of Technology - Mechanical	CGPA: 7.52 / 10
Mechanical Engineering Department	

RESEARCH EXPERIENCE

Research Associate, Machine Learning Lab, IISc Feb 2019 - Present
Advisor : Prof. Chiranjib Bhattacharyya

- Broadly work on unsupervised learning (generative models, disentanglement, domain adaptation), explainable models, AI in healthcare (disease classification/segmentation), and robotics (LiDAR, SLAM).
- Led and deployed research projects like DSLR on a self-driving robot and XraySetu, an Xray based automatic report generation tool for doctors.
- Collaborate with Prof. Soma Biswas, Dr. Vinay V, and Dr. Geetha Manjunath for some of these projects.
- Work with Project Associates, Masters, and PhD students. Also, mentor several research interns.
- Most of these projects are funded by Tata Motors, Ati Motors, Niramai, and ARTPARK.

Deep Learning Engineer, Donut Research Labs Jun 2018 - Feb 2019
Supervisor : Latha Iyer (Machine Learning R&D group)

- Worked on NLP research problems like extreme text classification and text normalization.
- Led and deployed brand-name text-normalization project for Walmart US.
- Also, worked on object and text detection on product images.
- Mentored software engineers and interns.

Research Student, Middleware and Runtime Systems Lab, IISc Aug 2015 - Jul 2016
Advisor : Prof. Sathish S. Vadhiyar

- Proposed a novel hierarchical partitioning-based task mapping algorithm which resulted in about 40% reduction in communication times on molecular dynamics benchmark datasets on Cray XC40 supercomputer.
- Awarded distinction for my masters' thesis.

Research Student, Computational and Data Sciences, IISc Aug 2014 - Jul 2015

- Worked on extracting semantic context in CNNs with Prof. R. Venkatesh Babu and Prof. Partha Pratim Talukdar.
- Built a hybrid parallel implementation of OpenMP and CUDA for Travelling Salesman Problem with Prof. Sathish S. Vadhiyar.
- Worked on an optimal diet problem project with Prof. Phaneendra K. Yalavarthy.

ENGINEERING EXPERIENCE

Software Engineer II, NVIDIA Aug 2016 - May 2018
Supervisors : Raghavendra VK and Ravi Chandra SV

- Owned display module and was Person-In-Charge for Device Tree on all self-driving embedded-system platforms.
- Led Xavier Chip Bringup for display and device tree modules.
- Mentored software interns.

PUBLICATIONS

- **Sabyasachi Sahoo**, Santosh Shet, Suchit Jain, Rachit Shah, Siva Teja Kakileti, Chiranjib Bhattacharyya, Geetha Manjunath. (June 2021). **"XraySetu : AI driven Xray Interpretation by Doctors via WhatsApp"**. The Journal of the American Medical Association. (journal submission) [demo, preprint, link1, link2]

- Prashant Kumar*, **Sabyasachi Sahoo***, Vanshil Shah, Vineetha Kondameedi, Abhinav Jain, Akshaj Verma, Chiranjib Bhattacharyya, Vinay V. (Feb 2021). **"DSLR : Dynamic to Static LiDAR scan Reconstruction using adversarially trained autoencoder"**. Proceedings of the AAAI Conference on Artificial Intelligence, 35(3), 1836-1844. [paper, project, code, datasets, link]

- **Sabyasachi Sahoo**, Sathish S. Vadhiyar. (July 2016). **"Hierarchical Task Mapping on Dragonfly topology for scaling Molecular Dynamics"**. Masters Thesis Book. [scholar, thesis, report, link]

POSTERS AND PREPRINTS

- Dhiraj Shanbag, **Sabyasachi Sahoo**, Chiranjib Bhattacharyya, Vinay V. (July 2020). **"An Approach For Accurate Sceneflow Prediction For LiDAR-based Sensors."**. Preprint. [preprint, link]

- Vineetha Kondameedi, Santosh Shet, Akshaj Verma, **Sabyasachi Sahoo**, Prashant Kumar, Chiranjib Bhattacharyya, Soma Biswas. (May 2020). **"FAIR : Frugal ADAS for Indian Roads"**. Preprint. [preprint, link]

- **Sabyasachi Sahoo**, Prashant Kumar, Chiranjib Bhattacharyya. (July 2019). **"Proximal pose search for adapting SLAM in dynamic environments on slow moving UGVs"**. 3rd Cyber-Physical Systems Symposium. (accepted poster). [poster, link1, link2]

- Prashant Kumar, Siddharth Ramesh, **Sabyasachi Sahoo**, Chiranjib Bhattacharyya. (July 2019). **"Autonomous Control of Distance Actuated MAV drones in GPS Denied Environments: Autonomous Indoor Navigation at IISc"**. 3rd Cyber-Physical Systems Symposium (accepted poster). [poster, link1, link2]

- **Sabyasachi Sahoo**, Vineetha Kondameedi, Srinivas Kruthiventi S. S., R. Venkatesh Babu, Partha Pratim Talukdar. (May 2015). **"Establishing Semantic relationships among object classes using Deep Networks to Image Classification"**. Preprint. [preprint, code, link]

ONGOING RESEARCH WORKS

- Gaurav Parashar*, **Sabyasachi Sahoo***, Chiranjib Bhattacharyya. **"Defending adversarial attacks on heatmap explanations using optimal ensembling"**.

- Akshaj Verma*, **Sabyasachi Sahoo***, Chiranjib Bhattacharyya. **"Towards Understanding Domain Adaptation quantitatively"**. [link]

- **Sabyasachi Sahoo**, Rachit Shah, Abhinav Jain, Chiranjib Bhattacharyya. **"CID : Captioning for Interpretability and Disentanglement"**. [link]

- Tezuesh Varshney, **Sabyasachi Sahoo**, Vineetha Kondameedi, Chiranjib Bhattacharyya. **"HRHQ : High Resolution High Quality image generation and disentanglement"**. [link]

TEACHING AND LEADERSHIP ROLES

- **ML/Autonomous Navigation Paper Reading Group**, IISc : Conduct and deliver talks on latest machine learning and autonomous navigation research papers. [youtube]

- **Research Mentor**, SHARE Research Labs : Teaching and mentoring students on the platform for working towards a research paper for top-tier conferences.

- **Deep Learning Brainstorming Sessions**, Donut Research Labs : Conducted and taught weekly sessions on latest deep learning research and engineering pipelines.

- **Placement Coordinator**, IISc : Invited, organized and coordinated on-campus placement for numerous MNCs and startups.

- **Head Coordinator Technical Events**, SVNIT : Formulated, organized, and headed various technical events for the technical college festival "Mindbend 2013".

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* equal contribution

HONORS AND AWARDS

- Ranked Top 5 in class (CDS 2014-16, IISc)
- Awarded distinction for masters' thesis
- NIPS 2017 Challenge (winner) [code]
- SO1 Customer Basket Prediction (3rd place) [code]
- Deep Traffic for self driving car (awarded finalist)

PERSONAL PROJECTS

- Depth Map for Image Classification [code]
- Car Image Masking [code]
- Text Normalisation for English [code]
- Paraphrase detection on Quora questions [code]

OTHER ACTIVITIES

- Selected for Oxford Machine Learning (OxML-2020) Summer School, Deep Learning Reinforcement Learning (DLRL-2020) Summer School, and Eastern European Machine Learning (EEML-2020) Summer School.
- ICML 2020 Conference Volunteer.
- State Level Lawn Tennis and Basketball player.

OUR WORK IN NEWS

- XraySetu is covered by NDTV, Gadgets Now, mint, Hindustan Times, Business Standard, Economic Times, ET HealthWorld, KnockSense, Bangalore Mirror, Jagran, Zee News Hindi, and Prasar Bharati (video).
- XraySetu is endorsed by Department of Science and Technology, Government of India here.
- COVID-SWIFT (previous version of XraySetu) is covered by The Hindu, and The Times of India.
- DSLR features on arXiv Daily and DeepAI.