

SABYASACHI SAHOO

(+91)8762245091 ◊ iamsabyasachisahoo@gmail.com ◊ sabyasachis.github.io ◊ gScholar ◊  ◊  ◊  ◊  ◊  ◊ 

EDUCATION

MILA & Université Laval Ph.D. Student	2021 - Present
Indian Institute of Science (IISc), Bangalore M. Tech. Computational Science Department of Computational & Data Sciences (CDS)	2014 - 2016 CGPA: 6.3 / 8 (top 5)
Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat Bachelor of Technology - Mechanical Mechanical Engineering Department	2010 - 2014 CGPA: 7.52 / 10

RESEARCH EXPERIENCE

Research Assistant, MILA & Université Laval Advisor : Prof. Christian Gagné, MILA & Université Laval Co-Advisor : Prof. Frédéric Precioso, INRIA & Université Côte d'Azur.	Aug 2021 - Present
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- Broadly work on developing robust machine learning systems for autonomous driving systems.
- Funded by DEEL project.

Research Associate, Machine Learning Lab, IISc Advisor : Prof. Chiranjib Bhattacharyya	Feb 2019 - August 2021
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- Broadly worked 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 Supervisor : Latha Iyer (Machine Learning R&D group)	Jun 2018 - Feb 2019
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- 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 Advisor : Prof. Sathish S. Vadhiyar	Aug 2015 - Jul 2016
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- 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
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- 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

Supervisors : [Raghavendra VK](#) and [Ravi Chandra SV](#)

Aug 2016 - May 2018

- 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](#)]

* equal contribution

- **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”.

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](#).