

Soham Chitnis

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Education

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI

Goa, India

B.E(HONS.) IN COMPUTER SCIENCE WITH MINOR IN DATA SCIENCE

Nov. 2020 - Present

- **CGPA** - 8.45/10
- **Relevant Completed Official Coursework:** Machine Learning, Deep Learning, Fundamentals of Data Science, Applied Statistical Methods, Computer Programming, Linear Algebra, Probability and Statistics, Calculus, Object-Oriented Programming, Data Structures and Algorithms

Thakur College of Science & Commerce

Mumbai, India

CLASS XII, MAHARASHTRA STATE BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION (MSBSHSE)

2019 - 2020

- **Percentage:** 90.77%

Cambridge School

Mumbai, India

CLASS X, INDIAN CERTIFICATE OF SECONDARY EDUCATION (ICSE)

2017 - 2018

- **Percentage:** 96.42%

Research Interests

Computer Vision, Deep Learning in Biomedical Image Analysis, Cognitive Neuroscience, Graph Representation Learning, Reinforcement Learning

Research Experience

Visual Computing Lab, Ontario Tech University

Toronto, Canada

VISITING SCHOLAR [WEBSITE](#)

June 2023 - Present

- **Supervisor:** Dr. Faisal Qureshi
- Working on **Pixel Unmixing** for HSI datasets using **Latent Dirichlet VAEs**
- Contributing to HSI data loading library

APP Center for AI Research, BITS Pilani

Goa, India

UNDERGRADUATE RESEARCHER | [WEBSITE](#)

Feb. 2022 - Present

- **Project:** Interpretable deep-learning methods for digital pathology image analysis
- **Supervisor:** Dr. Tanmay Verlekar, Dr. Tirtharaj Dash, Prof. Ashwin Srinivasan,
- **Collaborators:** Dr. Sidong Liu, Macquarie University, Sydney
- Proposed the use of **Domain-specific pre-trained** models for **multiple instance learning-based** cancer diagnosis models using Whole Slide Images which improves **confidence** of the models
- Previously worked on Molecule Generation using **Graph Autoencoders & Variational Graph Autoencoders**.

The Kwon Lab for Low Vision and Brain Research, Northeastern University

Boston, USA

RESEARCH ASSISTANT | [WEBSITE](#)

Oct. 2022 - April 2023

- **Supervisor:** Alish Dipani, Dr. MiYoung Kwon
- Understanding the statistical regularity for the **oblique effect** in Deep Neural Networks- CNNs & ViTs
- Creating benchmark datasets to understand the statistical regularities
- **Training** the state-of-the-art DNNs for understanding the effect of the regularity.

- **Project:** Hyperspectral Imaging for Plastic Segregation
- **Supervisor:** Dr. Madan Kumar Lakshmanan, Dr. Amalin Prince A.
- Implemented **Pre-processing** pipeline for HSI data and CNN models, built a dedicated **data augmentation** module for HSI and trained using **Self-supervised learning** method: SimCLR

Publications

1. **Chitnis, S.R.**, Liu, S., Dash, T., Verlekar, T.T., Di Ieva, A., Berkovsky, S., Vig, L. and Srinivasan, A., 2023. **Domain-Specific Pre-training Improves Confidence in Whole Slide Image Classification.** (Accepted at EMBC 2023)
Link: [Paper](#)

Teaching Experience

Introduction to Deep Learning, Quark Controls BITS Pilani Goa

Online

INSTRUCTOR

July 2022 - August 2022

- Taught an introductory course on Deep learning with focus on Computer Vision and mentored freshman students in the final project.

Computer Programming, BITS Pilani

Goa, India

TEACHING ASSISTANT

May 2022 - August 2022

- Conducted doubt solving sessions, evaluated labs and assisted **Prof. Anup B Mathew** & **Prof. Arnab K Paul**.

Selected Projects

Implementation of Super-Resolution ResNet(SRResNet) & Super-Resolution CNN(SRCNN)

March 2022

CODE & REPORT

- Implemented **Super-Resolution CNN** & **Super-Resolution ResNet** with an upsampling factor of 2
- Conducted experiments and study on interpolation modes and upsampling methods.

Comparative Study of Reward functions on Policy gradient

August 2021

CODE & REPORT

- Conducted a comparative study on different reward functions with **Policy gradient** algorithm to find minima of two variable quadratic function

Skills

- **Languages:** Python, C/C++, Matlab, Java
- **Deep Learning Frameworks:** PyTorch, Tensorflow, Keras
- **Tools:** GIT, Linux
- **Python Libraries:** Numpy, Scikit-Learn, OpenCV, Matplotlib, Pandas, Scipy

Honors & Awards

2023 MITACS Globalink Research Internship, MITACS

Goa, India

2020 100 percentile (Physics-Chemistry-Mathematics & Mathematics), Maharashtra Common Entrance Test

Mumbai, India

2017 Silver Medal, Dr. Homi Bhabha Young Scientist Competition

Mumbai, India

Committees

2022 Member, Society for Artificial Intelligence and Deep Learning

Goa, India

2021 Core Member, Electronics and Robotics Club

Goa, India