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.

Central Electronics Engineering Research Institute (CSIR-CEERI) *Chennai,India*

Research Intern | Website Code & Report *May 2022 - July 2022*

- **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 & Slides

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*