Soham **Chitnis**

sohamchitnis10@gmail.com | soham-chitnis10.github.io | soham-chitnis10 | soham-chitnis | soham_chitnis | Soham Chitnis

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

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, Cognitive Neuroscience, Graph Representation Learning, Reinforcement Learning

Research Experience

The Kwon Lab for Low Vision and Brain Research, Northeastern University — *Boston, USA*

Research Assistant | Website — *Oct. 2022 - Present*

- **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.

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.**

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
- Trained models 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 Pretraining Improves Confidence in Whole Slide Image Classification**. arXiv preprint arXiv:2302.09833.**(Under Review)**
   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**.

Mathematics-I (Multivariate Calculus), Academic Assistance Program CTE *Goa, India*
MENTOR *Dec. 2021 - May 2022*

- Mentored freshman students for the course Mathematics-I and helped them in solving doubts and understanding the concepts

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

Project Kratos *August 2021-Present*
WEBSITE

- Developing Mars Rover for Rover Challenges. Worked on developing models for Rock analysis using Computer Vision to detect the presence of life in rocks.

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

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*
2021 **Core Member, Life Detection,** Project Kratos *Goa, India*