

# Siba Smarak Panigrahi

+91 9439440550 • sibasmarak.p@gmail.com • sibasmarak.github.io

## Education

### B.Tech. in Computer Science and Engineering

2018–Present

Indian Institute of Technology, Kharagpur, India

GPA: 9.73/10

Department Rank 2 amongst graduating batch of CSE students.

### All India Senior School Certificate Examination (AISSCE)

2018

Kendriya Vidyalaya Sangathan (KVS), India

98.6%

Secured AIR 3, Rank 1 in Bhubaneswar Region. Among the top 0.1% of the 1.16 million candidates.

## Research Interests

Computer Vision, Multi-modal Learning, Bias and Explainability, Applications of Deep Learning

## Research Experience

### Contextual Bias in Visual Recognition Models

IIT Kharagpur

Bachelor's Dissertation / Supervisor(s): Prof. Abir Das (IIT Kharagpur),

Dr. Rameswar Panda (MIT-IBM Watson AI Lab)

Apr 2021 - Dec 2021

Evaluated mAP and used GradCAM with state-of-the-art computer vision models to quantitatively and qualitatively determine the contextual bias in images containing exclusive and co-occurring biased pairs. Proposed different biased models to inherently capture contextual bias and knowledge distillation approaches for automated bias mitigation.

### Explanation Based Learning in Pretrained Language Models

INK-Lab, USC

IUSSTF-Viterbi Intern / Supervisor: Prof. Xiang Ren

Jun 2021 - Sep 2021

Worked on different attention-based regularization and knowledge-distillation techniques to analyze the effect of explanations generated using gradient-based saliency methods in the performance of Pre-trained Language Models.

### Improving Digital Marketing with Topological Data Analysis

Adobe Research, India

Research Intern / Supervisor(s): Iftikhar Ahamath Burhanuddin,

Gautam Choudhary, & Manoj Kilaru

May-Jul 2021

Implemented Topological Regularization in LSTM Encoder-Decoder architecture to leverage the topological information from customer navigation patterns and obtain sessions' latent representation. Proposed a new metric to identify best session clustering and provided fine-grained cluster insights to improve digital marketing workflow.

### Emotion Recognition using EEG Signals

Bennett University, India

Research Intern / Supervisor(s): Prof. Arpit Bhardwaj, & Divya Acharya

Jul 2020–Aug 2020

Carried literature reviews of recent papers to understand the basics of Genetic Programming and Multi-Task Cascaded Networks. Designed CNN-based and LSTM-based architectures to obtain **87.72%** and **88.6%** mean accuracy, respectively, for classification of EEG signals into valence, arousal, liking, and dominance.

## Publications

- [1] (EMNLP 2021) Manav Nitin Kapadnis\*, Sohan Patnaik\*, Siba Smarak Panigrahi\*, Varun Madhavan\*, Abhilash Nandy. Leveraging Pre-trained Language Models for Key Point Matching. In Proceedings of the 8th Workshop on Argument Mining, (Punta Cana, Dominican Republic, 7-11 Nov. 2021), Association for Computational Linguistics, pp. 200–205 ([Paper](#)|[Code](#))
- [2] (IACC 2020) Divya Acharya, Riddhi Jain, Siba Smarak Panigrahi, Rahul Sahni, Siddhi Jain, Sanika Prashant Deshmukh, and Arpit Bhardwaj. Multi-class Emotion Classification Using EEG Signals. In Advanced Computing (Singapore, 11 Feb. 2021), D. Garg, K. Wong, J. Sarangapani, and S. K. Gupta, Eds., Springer Singapore, pp. 474–491. ([Paper](#)|[Code](#))

## Key Projects

### Reproducibility Challenge

IIT Kharagpur

RL Term Project / Course Instructor: Prof. Abir Das

Sep 2021 - Ongoing

Re-implemented the ideas proposed in the paper ([link](#)) to design questions to verify the alignment of an agent with a human reward function in explicit and implicit reward settings.

## SemEval 2021 Task 11: NLPContributionGraph

IIT Kharagpur

NLP Term Project | Course Instructor: Prof. Pawan Goyal

Apr 2021

Designed, implemented, and fine-tuned various BERT-based models to classify sentences as contribution sentences or not. Achieved the highest F1-score of 0.3101 in the Post-competition phase on the date of submission. ([Code](#))

## Study of Facebook posts during Elections

MIT, USA

Data Analytics Intern | Supervisor(s): Dr. Kiran Garimella (IDSS, MIT)

Prof. Aaditya Dar (ISB), & Vasundhara Sirnate (The Polis Project)

Dec 2020

Designed a complete framework to simplify the study of Facebook posts during elections. Analyzed page characteristics and post reactions from various politics-related Facebook pages and their correlation with election results. Trained simple classification pipelines for assigning most influenced political party to a post. ([Code](#))

## COVID-19 detection using Chest X-rays

Effat University, Saudi Arabia

Summer Intern | Supervisor: Prof. Abdulhamit Subasi

Jun 2020–Aug 2020

Designed architectures of 2 and 3 layered CNNs to obtain accuracy around **95%** for classification of X-Ray images into Normal, COVID-19, or Pneumonia. Combined Machine Learning algorithms and CNN architectures pre-trained on ImageNet to enhance the above accuracy to more than **96.5%**. ([Code](#))

## Academic Achievements & Honors

- Part of **technical (coding) team** (at IIT Kharagpur) responsible for organizing **JEE (Advanced)** (2021)
- Selected in the **Indo-US Science and Technology Forum (IUSSTF) - Viterbi** program (2021)
- Selected to receive **DAAD-WISE scholarship** to intern at the **University of Freiburg** (declined) (2021)
- Member of Bronze-winning **Inter IIT Tech Meet 9.0** contingent of IIT Kharagpur (2021)
- Awarded Gold Medal for securing **1st** position in Open IIT Maths Olympiad (2019)
- Awarded with **Technology Alumni Association (Delhi Chapter) Award** for securing highest CGPA at the end of semester II amongst all B.Tech/Dual Degree students (2019)
- Secured **2nd** rank in JBNSTS (Jagadis Bose National Science Talent Search) Examination (2018)
- Secured **All India Rank 828** in the KVPY (Kishore Vaigyanik Protsahan Yojana) examination (2017)
- Invited as **Guest of the Hon'ble Prime Minister of India** to witness Republic Day Parade from Prime Minister's Box for excellent performance in AISSE (All India Secondary School Examination) (2017)

## Relevant Coursework

**Mathematics** - Linear Algebra, Calculus, Probability and Statistics

**Ongoing** - Information Retrieval, Principles of Programming Languages

**Computer Science** - Reinforcement Learning, Deep Learning, Natural Language Processing, Machine Learning, Computer Networks\*, Operating Systems\*, Algorithms - I\* & II, Cryptography & Network Security, Theory of Computation, Discrete Structures, Computer Organization and Architecture\*, Compilers\*, Switching Circuits and Logic Design\*, Software Engineering\* (\* includes lab component)

## Skills

- **Programming Languages** - Python, C, Java,  $\text{\LaTeX}$ , Verilog, MIPS
- **Libraries** - PyTorch, PyTorch Lightning, Keras, Git, Huggingface, Timm, Neptune, Hydra, Captum
- **Web Development** - Django, HTML, CSS, Bootstrap, PostgreSQL

## Activities and Leadership

**Advisor (Current), Head (Dec 2020 - Jun 2021)**

IIT Kharagpur

Kharagpur Data Analytics Group (KDAG)

Initiated and organized open to all research paper-reading sessions ([GitHub](#)). Conducted Data Science and ML workshop for more than 600 registered students; taught Support Vector Machines and provided additional resources.

**Advisor (Current), Head (Aug 2020 - Jun 2021)**

IIT Kharagpur

Institute Wellness Group (IWG)

Guided web development team to design a website to spread awareness about activities and events organized by IWG. Planned campus-wide refresher events, month-long mental-health awareness drives, and Gatekeeper training programs. IWG is a wellness body of the campus, to aware students about mental health issues and methods to combat them.

## Professional Services

- Volunteering: EMNLP 2021