

# Siba Smarak Panigrahi

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## Education

|   |                                  |
|---|----------------------------------|
| <b>M.Sc. (Thesis) in Computer Science</b><br>McGill University and Mila, Montréal, Canada   | <b>2022–Present</b>              |
| <b>B.Tech. in Computer Science and Engineering</b><br>Indian Institute of Technology, Kharagpur, India<br>Department Rank 2 amongst graduating batch of CSE students.   | <b>2018–2022</b><br>GPA: 9.73/10 |
| <b>All India Senior School Certificate Examination (AISSCE)</b><br>Kendriya Vidyalaya Sangathan (KVS), India<br>Secured AIR 3, Rank 1 in Bhubaneswar Region. Among the top 0.1% of the 1.16 million candidates. | <b>2018</b><br>98.6%             |

## Research Interests

Representation Learning, Reinforcement Learning, Multi-modal Learning

## Research Experience

|   |   |
|---|---|
| <b>Visual Grounding in Textual Entailment</b><br>Bachelor's Dissertation   Supervisor(s): Prof. Abir Das, Dr. Rameswar Panda<br>Investigated the effect of simultaneously and individually visual grounding the premise and hypothesis in NLI task. Trained various BERT configurations by leveraging high-level feature representations of image from ResNet-50 and CLIP.  | <b>IIT Kharagpur</b><br>Jan 2022 - May 2022           |
| <b>Contextual Bias in Visual Recognition Models</b><br>Supervisor(s): Prof. Abir Das, Dr. Rameswar Panda (MIT-IBM Watson AI Lab)<br>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.                           | <b>IIT Kharagpur</b><br>Apr 2021 - Dec 2021           |
| <b>Explanation Based Learning in Pretrained Language Models</b><br>IUSSTF-Viterbi Intern   Supervisor: Prof. Xiang Ren<br>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.   | <b>INK-Lab, USC</b><br>Jun 2021 - Sep 2021            |
| <b>Improving Digital Marketing with Topological Data Analysis</b><br>Research Intern   Supervisor(s): Iftikhar Ahamath Burhanuddin, Gautam Choudhary, & Manoj Kilaru<br>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. | <b>Adobe Research, India</b><br>May 2021 - Jul 2021   |
| <b>Emotion Recognition using EEG Signals</b><br>Research Intern   Supervisor(s): Prof. Arpit Bhardwaj, & Divya Acharya<br>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.   | <b>Bennett University, India</b><br>Jul 2020–Aug 2020 |

## Publications

- [3] [Re]: Value Alignment Verification (Paper | Code)  
S. Panigrahi\*, S. Patnaik\*  
ML Reproducibility Challenge 2021; NeurIPS 2022 Journal Showcase Track.
- [2] Leveraging Pre-trained Language Models for Key Point Matching (Paper | Code)  
M. N. Kapadnis\*, S. Patnaik\*, S. Panigrahi\*, V. Madhavan\*, A. Nandy  
EMNLP Workshop - Workshop on Argument Mining, 2021.
- [1] Multi-class Emotion Classification Using EEG Signals (Paper | Code)  
D. Acharya, R. Jain, S. Panigrahi, R. Sahni, S. Jain, S. P. Deshmukh, A. Bhardwaj  
International Advance Computing Conference (IACC), 2020.

## Key Projects

### 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

- **Jamsetji Nusserwanji Tata (JN Tata) Scholar** (endowment for higher studies) (2022)
- **Eastern European Machine Learning (EEML) Summer School** (selected for poster presentation) (2022)
- **Research Week with Google (Computer Vision track)** (1 of 150 selected students) (2022)
- **Prof. J.C. Ghosh Memorial Endowment Prize** (highest CGPA after semester VI) (2021)
- **Indo-US Science and Technology Forum (IUSSTF) - Viterbi Award** (1 of 15 awardees) (2021)
- **DAAD-WISE scholarship, University of Freiburg** (declined) (2021)
- **Inter IIT Tech Meet 9.0** (Bronze-winning contingent of IIT Kharagpur) (2021)
- **Open IIT Maths Olympiad** (Team event; 1st position, Gold Medal) (2019)
- **Technology Alumni Association (Delhi Chapter) Award** (highest CGPA after semester II) (2019)
- **Jagadis Bose National Science Talent Search Examination** (Rank 2 of 173 awardees) (2018)
- **Kishore Vaigyanik Protsahan Yojana** (All India Rank 828) (2017)
- **KVS Junior Mathematical Olympiad** (Rank 6 in India; Rank 1 in Bhubaneswar region) (2016)
- **Regional Mathematical Olympiad** (Rank 2 in state) (2016)
- **Exchange Student, Sakura Exchange Program in Science** (1 of 90 selected students) (2016)

## Relevant Coursework

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

**Computer Science** - Deep Learning, Machine Learning, Reinforcement Learning, Natural Language Processing, Information Retrieval, Principles of Programming Languages, Computer Networks\*, Operating Systems\*, Algorithms - I\* & II, Cryptography & Network Security, Theory of Computation, 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, Kharagpur Data Analytics Group, IIT Kharagpur** ([Website](#) | [Reading-sessions](#))

**Advisor, Institute Wellness Group, IIT Kharagpur** ([Facebook](#))

## Professional Services

- Volunteering: EMNLP 2021, [DNetCV 2022](#) (CVPR-W)
- Reviewer: DNetCV 2022 (CVPR-W)