

Siba Smarak Panigrahi

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Education

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

Research Interests

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

Research Experience

Visual Grounding in Textual Entailment <i>Bachelor's Dissertation Supervisor(s): Prof. Abir Das, Dr. Rameswar Panda</i>	IIT Kharagpur Jan 2022 - ongoing
Contextual Bias in Visual Recognition Models <i>Supervisor(s): Prof. Abir Das, Dr. Rameswar Panda (MIT-IBM Watson AI Lab)</i> 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.	IIT Kharagpur Apr 2021 - Dec 2021
Explanation Based Learning in Pretrained Language Models <i>IUSSTF-Viterbi Intern Supervisor: Prof. Xiang Ren</i> 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.	INK-Lab, USC Jun 2021 - Sep 2021
Improving Digital Marketing with Topological Data Analysis <i>Research Intern Supervisor(s): Iftikhar Ahamath Burhanuddin, Gautam Choudhary, & Manoj Kilaru</i> 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.	Adobe Research, India May-Jul 2021
Emotion Recognition using EEG Signals <i>Research Intern Supervisor(s): Prof. Arpit Bhardwaj, & Divya Acharya</i> 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.	Bennett University, India Jul 2020–Aug 2020

Publications

- [4] 1 submission under review at **CVPR-W 2022**
- [3] 1 submission under review at **ML Reproducibility Challenge 2021**
- [2] **Leveraging Pre-trained Language Models for Key Point Matching** ([Paper](#) | [Code](#))
M. N. Kapadnis*, S. Patnaik*, **S. 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. S. Panigrahi**, R. Sahni, S. Jain, S. P. Deshmukh, A. Bhardwaj
International Advance Computing Conference (IACC), 2020.

Key Projects

Reproducibility Challenge <i>Reinforcement Learning Term Project</i> Submitted to <i>ML Reproducibility Challenge 2021</i> . Details omitted since the work is under review.	IIT Kharagpur Sep 2021 - Feb 2022
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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

- **PROSE, Microsoft Research** (winter research intern) (Jan - Jun 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

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, \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 Kharagur ([Website](#) | [Reading-sessions](#))

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

Professional Services

- Volunteering: EMNLP 2021