Siba Smarak Panigrahi

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Education

B.Tech. in Computer Science and Engineering   **2018–Present**
Indian Institute of Technology, Kharagpur, India (Department Rank 1)   *GPA: 9.80/10*

Research Interests

Bias and Explainability, Computer Vision, Deep Learning

Research Experience

Bias in Vision Models   **IIT Kharagpur**
Bachelor's Dissertation | Supervisor(s): Prof. Abir Das, Dr. Rameswar Panda (MIT-IBM Watson AI Lab)   *Apr 2021 - Ongoing*
Used mAP and GradCAM with state-of-the-art vision models to quantitatively and qualitatively determine the bias in images containing exclusive and co-occuring biased pairs. Designing bias mitigation strategies to improve the performance of biased vision models.

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 different techniques 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 topological information from customer navigation patterns. Used session representations for session clustering and providing fine-grained cluster insights to improve digital marketing workflow.

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 for classification of sentences as contribution sentences or not. Achieved the highest F1-score of 0.3101 in Post-competition phase on date of submission. (Code)

Study of Facebook posts during Elections   **IDSS, MIT, USA**
Data Analytics Intern | Supervisor(s): Dr. Kiran Garimella, & Prof. Aaditya Dar (ISB)   *Dec 2020*
Designed a complete framework to simplify the study of Facebook posts during elections. Analyzed distribution of page characteristics and post reactions, and their correlation with election results. Trained simple classification pipelines to assign a political party to a post. (Code)

Academic Achievements

- Selected in the **Indo-US Science and Technology Forum (IUSSTF)** - **Viterbi** program   (2021)
- Selected to receive **DAAD-WISE scholarship** for a summer research internship 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 end of semester II (2019)
- Selected as **Exchange Student** under **Sakura Exchange Program in Science**, Japan Science and Technology Agency   (2016)

Relevant Coursework & Skills

Mathematics - Linear Algebra, Calculus, Probability and Statistics
Ongoing - Reinforcement Learning, Theory of Computation, Cryptography & Network Security
Computer Science - Deep Learning, Natural Language Processing, Machine Learning, Computer Networks*, Operating Systems*, Algorithms - I* & II, Compilers*, Computer Organization and Architecture*, Software Engineering*   (* includes lab component)
Programming Languages - Python, C, Java, LaTeX, Verilog | **Web Devt.** - Django, HTML, CSS, Bootstrap, PostgreSQL
Libraries - PyTorch, PyTorch Lightning, Keras, Git, Huggingface, Timm, Neptune, Hydra, Captum, Scikit-Learn, Numpy

Activities and Leadership

Advisor (current), Head (Dec 2020 - Jun 2021)   **IIT Kharagpur**
Kharagpur Data Analytics Group (KDAG)
Initiated and organized research paper-reading sessions for students of IIT Kharagpur (GitHub). Conducted Data Science and ML workshop for more than 600 registered students; taught Support Vector Machines and provided additional related 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.

Publications

[1] Manav Nitin Kapadnis*, Sohan Patnaik*, **Siba Smarak Panigrahi***, Varun Madhavan*, Abhilash Nandy. Leveraging Pre-trained Language Models for Key Point Matching. In the 8th workshop on Argument Mining at Empirical Methods in Natural Language Processing (EMNLP) 2021 (Paper|Code)

[2] 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 Proceedings of the 10th International Advance Computing Conference (IACC), 2020. (Paper|Code)