Dipam Paul

GRADUATE, ECE, KIIT UNIVERSITY

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EDUCATION

Kalinga Institute of Industrial Technology, Bhubaneswar, India
Bachelor of Technology, Electronics and Telecommunication Engineering,   *May' 17 - Apr' 21*
GPA: 9.18/10 (Final)

RESEARCH INTERESTS

Deep Learning, Computer Vision, Medical Imaging, Deep Generative Models, Representation Learning, Continual Learning, Probabilistic Modeling, and Intelligence Theory.

PUBLICATIONS

Dipam Paul, Alankrita Tewari, and Imon Banerjee, "On the detection between Morphological Qualities of Sperm Cellular Images leveraging cDCGAN and Transfer Learning", Workshop Paper, *International Joint Conference on Artificial Intelligence* (IJCAI'21) [Under Review]

Dipam Paul, Alankrita Tewari, and Imon Banerjee, "Super Learner Model to Detect Abnormalities - OCT and blood smear imaging case studies", *Trustworthy AI for Healthcare, Thirty-Fifth AAAI Conference on Artificial Intelligence* (AAAI'21) [Paper]

Dipam Paul, Alankrita Tewari, and Imon Banerjee, "Boosting Classification Accuracy of Fertile Sperm Cell Images leveraging cDCGAN", Workshop Paper, *International Conference on Learning Representations* (ICLR'21) [Paper]

Dipam Paul, Alankrita Tewari, Sourodip Ghosh, and K. C. Santosh, "OCTx: Ensembled Deep Learning Model to Detect Retinal Disorders", *2020 IEEE 33rd International Symposium on Computer-Based Medical Systems* (CBMS'20), Rochester, Minnesota [Paper]

Dipam Paul, Alankrita Tewari, Sourodip Ghosh, and Sambit Prasad Kar, "MalariaX: Ensembled Neural Network Model to detect Parasitized Malaria from Cellular Images", Submitted, *SPIE Journal of Medical Imaging* [Preprint]

Dipam Paul, Prasant Kumar Pattnaik, and Proshikshya Mukherjee, "A Robust Approach with Text Analytics for Bengali Digit Recognition Using Machine Learning", *Studies in Big Data, Springer Nature Singapore* [Paper]

RESEARCH EXPERIENCE

Research Assistant, Carnegie Mellon University
Supervisor: Dr. Min Xu (Xu Lab)   *Oct' 2020 - Present*
- Researching on areas of Object Detection of macromolecules utilising 3D Cryo-ET Data. Additionally, worked on Continual Learning with a special focus on solving the Catastrophic Interference problem in Dynamically Expandable Networks.

Research Assistant, Emory University
Supervisor: Dr. Imon Banerjee (Banerjee Lab)   *Aug' 2020 - Present*
- Worked on the design and creation of a Deep Learning algorithm to solve Deep Brain Stimulation (DBS) for patients with Parkinson's disease.

Research Intern, Georgia Tech
Supervisor: Dr. Eva Dyer (NerDS Lab)   *May' 2020 - Aug' 2020*
- Worked on the design of a neural network for pairwise or triplet ranking losses to learn a space to embed Brain Imagery. Additionally, worked on the creation of a perceptual ranking dataset to use to train the model and quantification of model performance.

Research Intern, Indian Institute of Technology, Bombay
Supervisor: Dr. Amit Sethi (MeDAL Lab)   *Apr' 2020 - Aug' 2020*
- Collaborated on a landmark project concerning the detection of COVID-19 from a limited number of Chest X-ray and CT Images. Primarily worked with semi-supervised and self-supervised learning techniques such as Variational Autoenconders and SimCLR.

Project Intern, Indian Institute of Management, Ahmedabad
Supervisor: Dr. Ankur Sarin   *Dec' 2018 - Jan' 2019*
- Worked on a project to implement Right to Education under **The Ministry of Human Resource Development, Govt. of India**. Led field trips and submitted a practicum report on the advancement of the project.

CONFERENCES & TALKS

PyData Global 2020   [Speaker Profile]
Speaker/Presenter, Menlo Park, California (Nov' 2020)

Conference on Machine Intelligence in Medical Imaging 2020   [Speaker Profile]
Speaker/Presenter, Society for Imaging Informatics in Medicine, (Oct' 2020)

PyCon (Python Conference) Australia 2020   [Speaker Profile]
Speaker/Presenter, Adelaide, Australia (Sep' 2020)

PyCon (Python Conference) USA 2020   [Speaker Profile]
Speaker/Presenter, Pittsburgh, Pennsylvania (Apr' 2020)

Harvard US-India Initiative
- Delegate, Mumbai, India (Jun' 2020)
- One among 40 students selected across India.

PyCon (Python Conference) India 2019   [Speaker Profile]
Speaker/Presenter, Chennai, India (Oct' 2019)

PyCon (Python Conference) USA 2019   [Speaker Profile]
Speaker/Presenter, Cleveland, Ohio (May' 2019)
- Youngest presenter at the conference.

OTHER RESEARCH PROJECTS

Generating arXiv citation graph with Recurrent Neural Networks
[Project Report]   *Nov' 20*
- A novel pipeline which employs a combination of traditional heuristics and modern deep learning methods to find the list of papers cited by an article.

Corroborating On the Robustness of Neural Networks
[Project Report]   *Feb' 20*
- A sound and precise automated verifier for certifying robustness of neural networks based on Zonotope abstraction.

Disingenuous Questions Classification from Quora
[Code]   *Dec' 19*
- Deep learning for detecting insincere questions posted on Quora. This will aid to improve online conversations on Quora by impeding toxic content.

SKILLS

Languages: *Proficient:* Python, C, C++ *Familiar:* SQL, MATLAB
Deep Learning Frameworks: TensorFlow, PyTorch, Keras
Data Science Libraries: OpenCV, NumPy, Scikit-Learn, Pandas, Pillow, Seaborn, SciPy
Utilities: Git, Linux Shell, MS-Office, LaTeX, Microsoft Azure-ML Studio

ACADEMIC RESPONSIBILITIES, CERTIFICATION & AWARDS

Served as a **Reviewer** at **Science and Engineering of Deep Learning Workshop**, **ICLR 2021**
Dataquest.io (Recipient of the 'Data for Social Good' scholarship.)   Dec' 2019 - Apr' 2020
Intel Corporation (Recipient of Tech Scholarship at Intel Edge AI)   Dec' 2019 - Apr' 2020
Bertelsmann SE Co. KGaA (Recipient of Tech Scholarship)   Nov' 2019 - Mar' 2020
Certification: Deep Learning Specialization (5 Courses)   **deeplearning.ai**
Certification: Computational Neuroscience   **University of Washington**

MENTORSHIP ROLES

Project Mentor
KIIT-TBI, KIIT University   *Jan' 20 - Mar' 20*
- Mentored a class of 30 students from various disciplines through the fundamentals of Deep Learning.
- Conducted lectures on a weekly basis. Weekly assignments were designed and graded.

Coordinator
KIIT Model UN Society   *Jan' 2019 - Dec' 19*
- Established in 2013, it is the first Model UN Society in South-Asia.
- Mentored a group of 40 students enthusiastic about Model UN (on a rolling basis).
- Led the team to participate and win laurels in and across various parts of India.