ALLOY DAS

Curriculum Vitae

CVPR Unit
Indian Statistical Institute
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 Github

Work Experience

Oct. 2022 – Present **Project Linked Person**, *Computer Vision and Pattern Recognition Unit*, Indian Statistical Institute, Kolkata, India.
Gained comprehensive exposure to automatic handwritten answer script evaluation, Scene Text Spotting, and Scene Text Editing.

Sept. 2021 – Mar. 2022 **Research Intern**, *Computer Science & Engineering Department*, National Institute of Technology, Durgapur, India.
Worked on Medical Image Segmentation, Glaucoma Detection, and Covid Detection.

Education

2018 – 2022 **Bachelor of Engineering, Information Technology**, *University Institute of Technology*, Burdwan University, India. CGPA: 8.79/10.
Courses: Artificial intelligence, Image Processing, Machine Learning, Deep learning
Final Year Project: Retinal Disease Glaucoma Segmentation and Detection Using Machine Learning Framework

2015 – 2017 **Higher Secondary Examination**, *T. T. Dr. Bidhan Chandra Roy Vidyalaya (H.S.), West Bengal Council of Higher Secondary Education*, Tribeni, Hooghly, WB, India, Percentage: 74%.

2015 **Secondary Examination**, *T. T. Dr. Bidhan Chandra Roy Vidyalaya (H.S.), West Bengal Board of Secondary Education*, Tribeni, Hooghly, WB, India, Percentage: 86%.

Publications

Journal Articles

2022 Palaiahnakote Shivakumara, Alloy Das, KS Raghunandan, Umapada Pal, and Michael Blumenstein. New deep spatio-structural features of handwritten text lines for document age classification. *International Journal of Pattern Recognition and Artificial Intelligence*, volume 36, page 2252013. World Scientific, 2022.

In Conference Proceedings

2022 Alloy Das, Rohit Agarwal, Rituparna Singh, Arindam Chowdhury, and Debashis Nandi. Automatic detection of covid-19 from chest x-ray images using deep learning model. In *AIP Conference Proceedings*, volume 2424, page 040003. AIP Publishing LLC, 2022.

2022 Arindam Chowdhury, Rohit Agarwal, Alloy Das, and Debashis Nandi. U-net based optic cup and disk segmentation from retinal fundus images via entropy sampling. In *Advanced Computational Paradigms and Hybrid Intelligent Computing: Proceedings of ICACCP 2021*, pages 479–489. Springer, 2022.

Research Experience

Indian Statistical Institute, Kolkata, India.

April. 2023 – Present **FAST: Font Agnostic Scene Text Editing**, *Advisor: Prof. Umapada Pal* .
We developed a font-agnostic scene text editing framework called FAST. FAST addresses the challenges posed by complex image backgrounds, various font styles, and varying word lengths in existing methods. It generates text in arbitrary styles and locations while preserving a natural appearance.

Jan. 2023 – Feb. 2023	***Diving into the Depths of Spotting Text in Multi-Domain Noisy Scenes***, *Advisor: Prof.* *Umapada Pal* . We examined how noises impact transformer-based scene text spotting systems, specifically utilizing underwater scenes for observation. We introduced the concept of domain-agnostic scene text spotting and provided a validation benchmark tailored to noisy underwater scenes. Additionally, we proposed a novel evaluation benchmarking protocol specific to our underwater text spotting dataset that we annotated for scene text spotting task.
Oct. 2022 – Jan. 2023	***Harnessing the Power of Intermediate Representations for Domain Adaptation: Towards*** ***Enhancing Text Spotting Performance***, *Advisor: Prof. Umapada Pal* . Our work focuses on domain-adapted scene text spotting, training models to adapt to diverse real-world conditions. We introduce Swin-TESTR, a transformer baseline for accurate and efficient spotting of regular and arbitrary-shaped scene text across multiple domains. Our findings highlight the potential of intermediate representations for improved accuracy and model efficiency in text spotting benchmarks.
Jan. 2022 – Oct. 2023	***Soft Set-based MSER End-to-End System for Occluded Scene Text Detection, Recogni-*** ***tion and Prediction***, *Advisor: Prof. Umapada Pal* . We introduces a novel Soft Set-based system for text detection, recognition, and prediction in occluded natural scene images. It combines Soft Sets with Maximally Stable Extremal Regions for robust text detection, utilizes a Graph Recurrent Neural Network for grouping text components, and employs a Convolutional Recurrent Neural Network for accurate text recognition and predicting missing characters. Experimental results validate its superior performance compared to existing methods in text-related tasks.

National Institute of Technology, Durgapur, India.

Sept. 2021 – March. 2022	***Medical Image Segmentation, Glaucoma Detection, and Covid Detection.***, *Advisor: Prof.* *Debasis Nandi*. We proposed a novel method to segment medical images and identify diseases. We utilized this method for Glaucoma detection, focusing on identifying condition-related features in retinal fundus images. We then extended the approach to detect COVID-19, with the aim of identifying virus-related abnormalities in chest CT scan imaging data.

Computer skills

Programming	Python, MATLAB, C
Libraries	PyTorch, Keras, Tensorflow
Documentation	MS Office, LaTeX
Languages	English, Bengali (Native) & Hindi