

ARITRA DEY

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EDUCATION

MS in Computer Engineering, University at Albany, State University of New York, USA Aug 2021 - May 2023

Relevant Coursework: Optimization Methods and Nonlinear Programming,

CGPA: 3.6/4

Information Theory, Inference and Machine Learning,

Advanced Linear Algebra, Data Mining

Master of Computer Technology, Jadavpur University, India

Sept 2017 - Jun 2020

Relevant Coursework: Artificial Intelligence,

CGPA: 8.81/10

Pattern Recognition, Image processing, Theory of Computing.

Bachelor of Electronics and Communication Engineering,

Aug 2012 - May 2016

West Bengal University of Technology, India

CGPA: 8.78/10

TECHNICAL SKILLS

Programming Languages

Python, Matlab, C#, C

Programming Libraries

OpenCV, NumPy, Pandas, Scikit-learn

Frameworks

PyTorch, TensorFlow .Net MVC, Entity Framework

Software

Anaconda, Matlab, Visual Studio

Database

Microsoft SQL server

Operating Systems

Linux, Windows, macOS

Version control software

Microsoft Team Foundation Server, Gitlab, Bitbucket

GENERATIVE AI SKILLS

- Strong understanding of the theoretical foundations and practical applications of stable diffusion in the context of Generative AI
- Extensive knowledge of the stable diffusion algorithm, with expertise in its basic mathematical modeling.
- Hands-on experience in training and fine-tuning models for image synthesis and generation tasks using stable diffusion techniques.

PROJECT EXPERIENCE

International Workshop on Responsible Face Image Processing (ReFIP 2024)

Sep 2023 - Present

Independent Research(Ongoing)

Albany, NY

- The research focuses on reducing the dependency on pose variation in face recognition systems.
- The primary goal is to generate 3D facial representations with maximum invariance towards pose, illumination, and occlusion.
- The crucial challenge to be solved in this research is generating the 3D facial representation with the minimum number of facial poses during the training. The target minimum number of facial poses to be used remains 1.

Coursework Project (Right now ongoing as a personal project)

Feb 2023 - Aug 2023

University at Albany, SUNY

Albany, NY

- As part of a coursework project for Data Mining, worked on locating and segmenting tumors in Brain MRI scans using UNET with skip connection architecture.
- The initial DICE score of 0.5743 was improved to 0.6266 by implementing the attention mechanism in the UNET architecture.
- Currently working on locating the tumors in Brain MRI scans in a semi-supervised manner to slowly shift the basis of the segmentation model from data-driven to model-driven.

- This work focuses on reducing the dependency on datasets of MRI scans containing tumors. Rather the model aims to learn a prior distribution of healthy brain cells to segment out the tumor region.

Graduate Student Assistant
University at Albany, SUNY

May 2022 - Jul 2022
Albany, NY

- Developed a deep learning-based receiver design using MLP (Multi-Layer Perceptron) mixer architecture to remove non-linear distortions from least square equalized OFDM symbols.
- MLP mixer improved over traditional deep neural networks as traditional deep networks cannot handle the huge feature space of OFDM symbols.
- Reduced Bit Error Rate (BER) from 0.5 to a range of $10^{-1} - 10^{-3}$ for over 5B -25dB SNR range

Student Research Assistant
Jadavpur University

Mar 2020 - Sep 2020
Kolkata, India

- Proposed a novel deep network based on Holistically Nested Edge detection architecture to predict the gradient sensitivity in an image to outperform traditional An-Isotropic diffusion methods.
- The gradient sensitivity obtained using deep networks proved better in terms of Structural similarity(SSIM) values when compared to traditional methods(with exponential, quadratic, and TukeyBiweight as conductance functions)
- The improvement in SSIM values as compared to the traditional methods ranged between (2-13)%

Student Research Assistant
Jadavpur University

Nov 2019 - Feb 2020
Kolkata, India

- Proposed a Center of Gravity (CG) based quad-partitioning of images on extracting Histogram of Oriented Gradients (HOG) features normally calculated over equally partitioned images.
- These modified feature sets are used to classify handwritten Tibetan characters classified using Extreme Learning Machine.
- ELM-based classification topped the accuracy with 94.97% compared to classic machine learning algorithms like SVM, kNN, Random Forest, MLP, and deep learning architectures like AlexNet and LeNet5

PROFESSIONAL EXPERIENCE

System Engineer
Tata Consultancy Services Limited

Jul 2018 - Feb 2021
Kolkata, India

- Coordinated the business requirement analysis and implemented the corresponding module development.
- Developed stored procedures for data extraction to reduce manual effort and improve the efficiency of daily report generation.
- Provided rapid analysis and resolution for application and production issues like unhandled exceptions arising in the production environment and the problems faced by the end-user like payment failures.
- The resolution provided eliminated 80% recurrence of production issues which saved at least 6-7 man-hours of re-work.
- Document a clear explanation of the resolution of issues, inquiries, and requests.

Assistant System Engineer
Tata Consultancy Services Limited

Jul 2017 - Jun 2018
Kolkata, India

- Analyzed the business requirement and developed solutions for the business modules as an end product.
- Coordinated, streamlined, and executed the development of a back office solution based on the .Net MVC framework to monitor and control critical aspects of the end-user profiles.
- Designed the relational database for the back office using Entity framework which eliminated 2-3 man-hours of initial database design using the traditional model.
- Spearheaded and successfully integrated the back-office application with the Azure cloud.

- Back office application helped increase customer engagement by 20%.

Assistant System Engineer Trainee

Tata Consultancy Services Limited

Sept 2016 - Jun 2017

Kolkata, India

- Designed and developed Unit Test Cases for the business scenarios. This helped in understanding the whole business in module wise manner and the relationship between them.
- Unit Test Cases development reduced low-level production issues by 50%

PUBLICATION

2020 IEEE Calcutta Conference (CALCON)

Feb 2020

Handwritten Tibetan Character recognition based on ELM using modified HOG features [CALCON 2020](#)