RIKESH MANDAL

Software Developer

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PERSONAL STATEMENT

Passionate and hands-on Machine Learning Engineer and Software Developer with a solid foundation in deep learning, computer vision, and full-stack development. I bring experience building robust ML pipelines for image-based tasks such as monocular depth estimation and 3D reconstruction, as well as developing RESTful APIs and backend systems using Spring Boot and Django. My background blends research focused AI development with production grade software skills, making me well suited for dynamic roles that combine both. I'm driven by a deep curiosity for AI applications and the practical implementation of intelligent systems.

SKILLS

- **Technical Skills**
  Programming Language: Java, Python, JavaScript, MATLAB
  ML/AI Frameworks: PyTorch, TensorFlow, Keras, OpenCV, Scikit-learn
  Web-Develpoment Frameworks: Django, Vue.JS, Java Spark, Springboot
  Networking: Introduction to Networking, Switching Routing and Wireless Essentials (SRWE), Enterprise Networking, Security and Automation (ENSA)
  Tools & Technologies: Git, GitHub, MySQL, SQLite, Swagger, REST APIs, Open3D, Postman, Virtual Environments, Docker (basic)
  Others: Computer Vision, Machine Learning, Deep Learning, IoT, Network Security, API Design, Depth Estimation, Point Cloud Processing
  Operating Systems: Microsoft Windows, Linux, MacOS

PROJECTS

- ### Image-to-3D Reconstruction from a Single Image

  Creator

  https://github.com/Rikesh-Mandal/ImageTo3D

  Developed a deep learning pipeline using PyTorch for monocular depth estimation with a ResNet50 encoder-decoder architecture. Trained the model on the NYU Depth V2 dataset to predict depth maps from RGB images. Generated 3D point clouds using Open3D from the predicted depth maps and RGB images. Performed surface reconstruction using the Poisson algorithm and mesh refinement techniques.

  Technologies Used:

  - Programming Languages: Python
  - Libraries/Frameworks: PyTorch, OpenCV, Open3D, Matplotlib, NumPY, SciKit-Learn, TensorFlow
  - Tools: Git, GitHub, Virtual Environments

  Key Contributions:

  - Implemented a ResNet50-based encoder-decoder model for depth estimation.
  - Processed and prepared the NYU Depth V2 dataset for training and evaluation.
  - Developed scripts for generating point clouds and reconstructing 3D meshes.
  - Created a modular and reusable codebase with clear documentation.

- ### Image Classification System

  Creator

  https://github.com/Rikesh-Mandal/image-classification-system/tree/master

  Developed an image classification system that classifies animal images. This project was aimed to classify images of 9 different animals (9 classes). A deep learning, namely a custom Convolutional Neural Network (CNN) architecture was designed from scratch to achieve its goal. This was done to gain more control over the architecture, making it possible to fine-tune each layer such as the filter size used, number of filters, and so on. Multiple convolutional layers, with increasing depth, were one of the key innovations in this design. These layers were complimented by batch normalization and dropout layers to prevent overfitting. Convolutional filters of size 3x3 were used which are effective at capturing fine details within images. It achieved an overall accuracy of 79.51%.

- ### Sign Language to Speech Gloves

  Creator

  Designed and developed an innovative glove embedded with flex sensors and a gyroscope that connected to an Arduino to translate American Sign Language into speech. This project showcases my ability to apply machine learning algorithms and integrate hardware with software to create user-friendly solutions, demonstrating my problem-solving capabilities and adaptability. K-Nearest Neighbor was implemented using Python and the dataset was self created, cleaned and preprocessed.

- ### Support Ticket System

  Creator

  https://github.com/Rikesh-Mandal/ticket.git

  Developed a web-based support ticket management system that allows users to create, track, and manage customer support tickets efficiently. This project involved backend development with Django and Django REST Framework, focusing on building robust REST APIs.

- ### Image Compressor

  Creator

  https://github.com/Rikesh-Mandal/Image-compressor.git

  Built a client-side image compression tool using JavaScript frameworks and libraries, reducing image size without compromising quality. This project illustrates my frontend development skills and understanding of efficient data handling techniques.

- ### Image Cropper

  Creator

  https://github.com/Rikesh-Mandal/ImageCropper.git

  Developed a client-side application for cropping images directly in the browser, allowing users to manipulate images easily without server-side processing. This project underlines my skills in frontend development and working with user-centric design.

- ### Smart Solar Panels

  Creator

  Contributed to the development of a single-axis solar panel that uses sensors to detect light intensity and adjusts its position for optimal solar energy absorption.

WORK EXPERIENCE

- ### FocusOne Payment Solutions - October 2022 - January 2024

  Assistant Java Developer

  Key Responsibilities:

  - Research new technologies such as NATS.IO to be used in distributed systems for messaging.
  - Write, modify and maintain software documentation and specifications.
  - Responsible for building REST APIs. Responsible for developing SCT Credit/Debit Card authorization System.
  - Responsible for making changes to in-house applications as per the requirement.
  - Building new systems as per the requirement. Modifying and debugging existing systems.
  - Creating API documentation using swagger.io.

EDUCATION

University of East London - 2024 - 2025

MSc Artificial Intelligence

Award Classification: Passed with Distinction 82%

London Metropolitan University - 2021 - 2023

BSc (HONS) Computer Networking and IT Security

Award Classification: First Class Honours - 81.94%

COURSES AND CERTIFICATES

Google Data Analytics Specialization - Coursera

https://www.coursera.org/account/accomplishments/specialization/certificate/BJ8BL36A2LUW

Data Science Foundations: Fundamentals - LinkedIn Learning

https://drive.google.com/file/d/1G2py84QryU2GW-_kVNUVMmliMFYEITDj/view

AWS Academy Data Center Technician - AWS

https://www.credly.com/badges/6b270bac-e891-434c-a5db-806e2092203a?source=linked_in_profile

AWS Academy Cloud Foundations - AWS

https://www.credly.com/badges/0aa9f239-f170-4b83-b30e-c6d036f434c3?source=linked_in_profile

API Designer - API Academy

https://drive.google.com/file/d/1Z8KSnpThWHxJJONJP6ItuIcpcXj_-xvu/view?pli=1

API Security Architect - API Academy

https://drive.google.com/file/d/1n7KKXNfOtxw2QFbSh4kwmsWh9GDe6T_X/view?usp=drive_link