

Nasim Anzum Promise

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Summary

Computer Science graduate with experience in AI, Machine Learning, and Robotics. Experienced in developing intelligent systems for healthcare, automation, and human-computer interaction. Skilled in deep learning, computer vision, and knowledge distillation, with a strong focus on real-world applications.

Education

BS in Computer Science and Engineering
North South University, Dhaka, Bangladesh

July 2020 – December 2024

- Achieved overall 82% marks
- **Coursework:** Machine Learning, Pattern Recognition, Data Structure & Algorithm, Software Engineering, Microprocessor Interfacing & Embedded System, Database Management System, Programming Language

Technical Skills

Programming Languages: : Python, C, C++, Java, HTML, CSS, PHP, SQL

Machine Learning Frameworks: TensorFlow, PyTorch, scikit-learn

Projects

1. A Knowledge Distillation-Based Approach for Lung Cancer Detection: Leveraging Explainable AI for Enhanced Transparency

- An AI-driven approach for lung cancer detection from histopathological images using Knowledge Distillation (KD).
- Trained eight CNNs model to identify the best-performing teacher model.
- Designed a lightweight student model that learns from the teacher model, reducing computational cost while maintaining high accuracy.
- Integrated Explainable AI (XAI) techniques to enhance the transparency and understanding of the model.

2. Intelligent Dual Robotic Arms: A Computer Vision-Based Approach to Autonomous Motion (Hardware-based Project)

- Implemented an artificially intelligent dual robotic arm system designed to perform autonomously in a dynamic environment.
- Using computer vision algorithms, it can understand its surroundings in real time.
- YOLOv5 is used for object detection, and using advanced machine learning algorithms, the system can process environmental data and make autonomous decisions to perform tasks.
- The robotic arms can autonomously perform tasks such as pick and place, single-arm serving of water, dual-arm serving of water, and can also be controlled using voice commands and hand gestures.

3. Developing and Optimizing Lightweight Models for Diabetic Retinopathy Detection Using Diverse Knowledge Distillation Strategies

- Developed a deep learning model for Diabetic Retinopathy (DR) detection using retinal fundus images.
- Applied knowledge distillation techniques (Basic KD, Teacher-Assistant (TA) KD, and Self KD) for model compression.

4. A Two-Stage Framework for Dynamic Two-Hand On-Screen Keyboard-Mouse Interaction

- Developed a gesture-based keyboard-mouse control system using computer vision.
- Utilized a coordinate geometrical approach for gesture recognition instead of machine learning models.
- dual-hand input for the virtual keyboard, mimicking natural physical keyboard motions.

Publications

A Two-Stage Framework for Dynamic Two-Hand On-Screen Keyboard Mouse Interaction

4th International Conference on Human-Machine Interaction (ICHMI '24), published in the ACM Digital Library

<https://doi.org/10.1145/3678429.3678434>