Department of Electrical and Computer Engineering
North South University

Senior Design Project

Disaster Rescue AI:
Advanced AI for Finding Alive People in Disasters and Alert System

Abu Mukaddim Rahi **2022027042**

Abdullah Almoon **1922223642**

Amrina Afroz Deena **1712159042**

Md. Abu Shufian Shohan **1831274642**

Faculty Advisor:

Dr. Mohammad Ashrafuzzaman Khan

Associate Professor

ECE Department

Spring, 2024

To

Dr. Rajesh Palit
Chairman,
Department of Electrical and Computer Engineering
North South University, Dhaka

Subject: **Submission of Capstone Project Report on "Disaster Rescue AI: Advanced AI for Finding Alive People in Disasters and Alert System"**

Dear Sir,

With due respect, we would like to submit our **Capstone Project Report** on **"Disaster Rescue AI: Advanced AI for Finding Alive People in Disasters and Alert System"** as a part of our BSc program. The report deals with Disaster Rescue AI system using machine learning and computer vision. This project was very much valuable to us as it helped us gain experience from practical field and apply in real life. We tried to the maximum competence to meet all the dimensions required from thisreport.

We will be highly obliged if you kindly receive this report and provide your valuable judgment. It would be our immense pleasure if you find this report useful and informative to have an apparent perspective on the issue.

Sincerely Yours,

.....
Abu Mukaddim Rahi
ECE Department
North South University, Bangladesh

.....
Abdullah Almoon
ECE Department
North South University, Bangladesh

.....
Amrina Afroz Deena
ECE Department
North South University, Bangladesh

.....
Md. Abu Shufian Shohan
ECE Department
North South University, Bangladesh

APPROVAL

Abu Mukaddim Rahi (2022027042), Abdullah Almoon (1922223642), Amrina Afroz Deena (1712159042) and Md. Abu Shufian Shohan (1831274642) from Electrical and Computer Engineering Department of North South University, have worked on the Senior Design Project titled **"Disaster Rescue AI: Advanced AI for Finding Alive People in Disasters and Alert System"** under the supervision of Dr. Mohammad Ashrafuzzaman Khan partial fulfillment of the requirement for the degree of Bachelors of Science in Engineering and has been accepted as satisfactory.

Supervisor's Signature

…….

Dr. Mohammad Ashrafuzzaman Khan

Associate Professor

Department of Electrical and Computer Engineering

North South University

Dhaka, Bangladesh.

Chairman's Signature

…….

Dr. Rajesh Palit

Professor

Department of Electrical and Computer Engineering

North South University

Dhaka, Bangladesh.

DECLARATION

This is to declare that this project is our original work. No part of this work has been submitted elsewhere partially or fully for the award of any other degree or diploma. All project related information will remain confidential and shall not be disclosed without the formal consent of the project supervisor. Relevant previous works presented in this report have been properly acknowledged and cited. The plagiarism policy, as stated by the supervisor, has been maintained.

Students' names & Signatures

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

1. Abu Mukaddim Rahi

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

2. Abdullah Almoon

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

3. Amrina Afroz Deena

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

4. Md. Abu Shufian Shohan

ACKNOWLEDGEMENTS

The authors would like to express their heartfelt gratitude towards their project and research supervisor, Dr. Mohammad Ashrafuzzaman Khan, Associate Professor, Department of Electrical and Computer Engineering, North South University, Bangladesh, for his invaluable support, precise guidance, and advice pertaining to the experiments, research and theoretical studies carried out during the course of the current project and also in the preparation of the current report.

Furthermore, the authors would like to thank the Department of Electrical and Computer Engineering, North South University, Bangladesh for facilitating the research. We would also like to thank our senior Md. Khurshid Jahan for helping us in this project. The authors would also like to thank their loved ones for their countless sacrifices and continual support.

ABSTRACT

Disaster Rescue AI:
Advanced AI for Finding Alive People in Disasters and Alert System

In the wake of natural disasters, rapid and accurate identification of survivors is critical to saving lives. This paper presents an AI-based approach utilizing YOLO (You Only Look Once) versions 8 and 9 for detecting survivors in disaster scenarios, specifically fire incidents, using both day and night data captured by drones. We collected and annotated 8,232 images, trained the models, and achieved notable accuracies: YOLOv8 achieved 91% for day data and 89% for night data, while YOLOv9 scored 87% for both. Combined day and night data yielded 74% accuracy for YOLOv8 and 79% for YOLOv9. These results demonstrate the potential of AI to enhance disaster response effectiveness.