Mepco Schlenk Engineering College Department of Artificial Intelligence and Data Science

Fortnight's Report

Date of Submission: 20/12/2024

Fortnight Period: 9/12/2024 – 21/12/2024

Project Title: **Integrating Deep Learning for Safety Management in Construction: Semantic Image-Rule Matching for Unsafe Behavior Detection Using YOLO-ESCA.**

Project Guide: **Dr.P.Swathika, ME, PhD, Assistant Professor AI&DS Department.**

Name of the Students with Register Numbers:

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Activities Done:

- The first review presentation was successfully completed.
- A literature survey was conducted.
- A custom dataset was created by combining the MS-COCO 2020 dataset and the Construction Site dataset from Roboflow.
- Implementation of the Region Proposal Network (RPN) with Safety Rule Embeddings was completed, and the model was trained for 2 epochs.
- Integration of the SCAN (Self-supervised Cross Attention Network) with the previously implemented network was achieved, and training was performed for 2 epochs.

Constraints faced:

- High Computational Cost for training a model.
- Difficulty in achieving optimal hyperparameter tuning.

Intermediate deliverables:

1. **Custom Dataset Creation**

- A combined dataset from MS-COCO 2020 and the Construction Site Dataset with annotated bounding boxes and object classes.

2. **Trained Models**

- Region Proposal Network (RPN) integrated with Safety Rule Embeddings, and SCAN network trained for 2 epochs each, along with training logs and performance metrics.

Signature of the Guide with Date:

Signature of the Project Coordinator with Date: