**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.

1. **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:**