Problem Statement Details for Intel Unnati Industrial Training – Summer 2025

Problem Statement

Create pipeline (detect, decode and classification) using DL Streamer, define system scalability for Intel HW (by Ranjan Mishra)

Pre-requisites:

- Concepts in machine learning
- Programming skills (Python)
- OS (Linux)

Category: AI, machine learning, System scalability

Semester: 5th/6th

Description:

As deployment of Edge and AI are growing, City and transportation are adopting new use-cases where more and more visual cameras are deploying across cites. It is very hard to manual scan all the cameras' feeds. AI is helping to decode, detect and classify those cameras feeds and providing analytics. Those cameras are used every where like Mahakumbh or Cricket.

Example : https://www.livemint.com/news/mahakumbh-2025-how-ai-powered-facial-recognition-is-assisting-law-enforcement-agencies-surveillance-security-cctv-11737512022231.html

https://www.icc-cricket.com/media-releases/icc-tv-to-deliver-comprehensive-coverage-with-ai-powered-innovations-and-star-studded-commentary-team-for-icc-men-s-t20-world-cup-2024

Those AI cameras needs compute, storage and networking. Intel HWs are the capable to handle those AI cameras.

DL streamer (https://dlstreamer.github.io/dev_guide/dev_guide_index.html) optimized to run at Intel HWs.

Create pipeline (decode, Detect and classify) on Intel HW (CPU and GPU) run pipeline on CPU, GPU. Figure out how many cameras streams are supported, what is optimum FPS which model best on Intel HW.

Outcomes:

- Maximum number of streams, FPS and Model on CPU
- Maximum number of streams, FPS and Model on GPU
- Bottleneck CPU, GPU, or IO
- Create a 3-page report on the chosen problem, Pipeline, and results of each model