

Construction Site Safety – SiteSafeAI

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AI-Powered Helmet and High Visibility Jacket Detection on Construction Sites Through Live Video Monitoring



Can You See Anything Missing?

Why?

Protect the construction staff

Ensuring safety compliance on construction sites is critical to preventing accidents and injuries. Manual monitoring can be inconsistent and inefficient. This AI-powered solution automates the detection of helmets and high-visibility jackets, helping to ensure that all workers adhere to safety regulations in real time, improving safety and reducing risks.

Technologies Used

Python - Main Programming Language



YOLO - Object Detection



Ultralytics - Framework



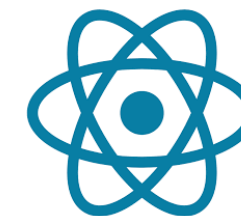
OpenCV – Computer Vision Library



Flask – Web Framework



React – Front End



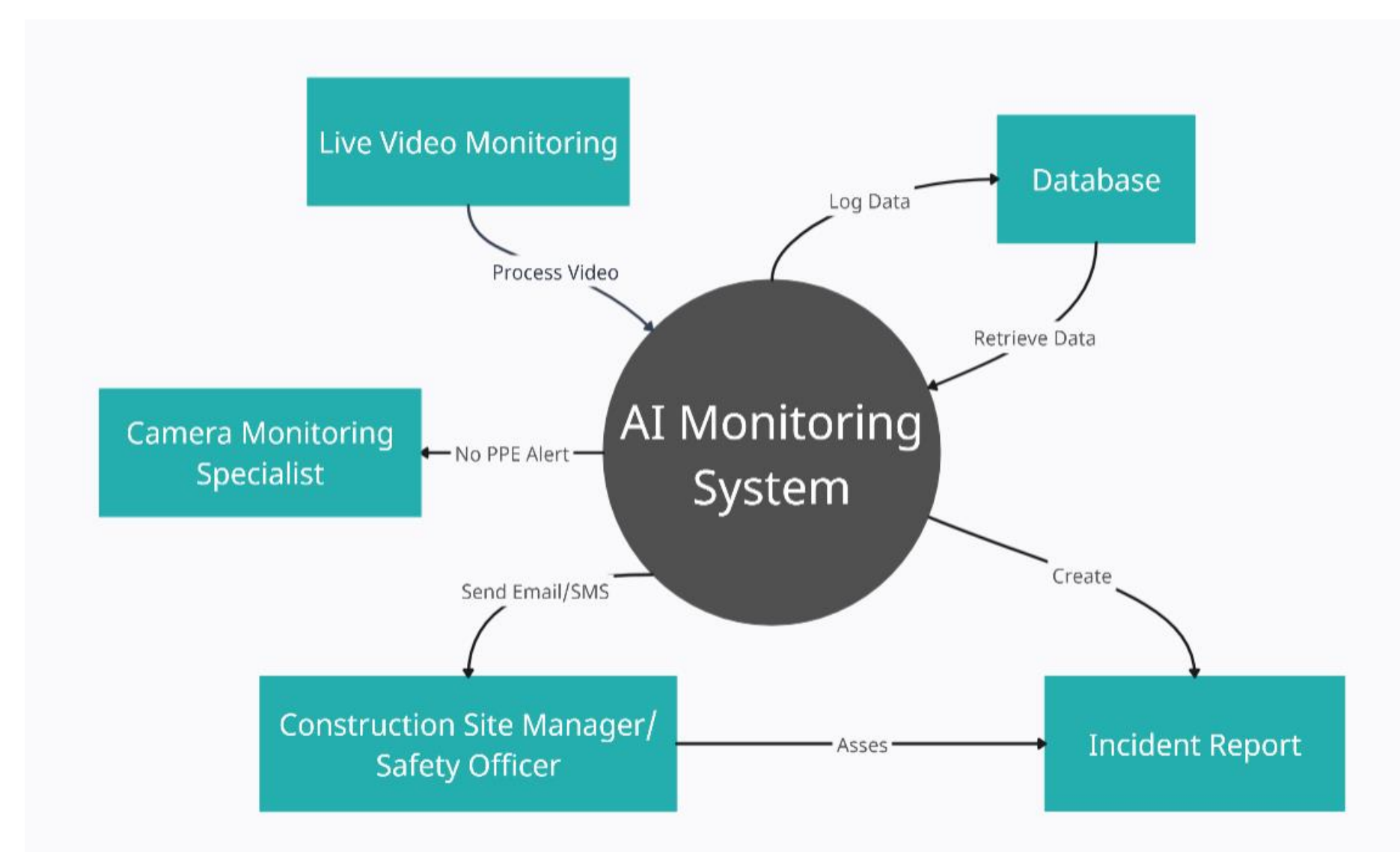
SMTP – Email Service



MySQL - Database



How It Works



Is There Anything Similar?

Currently, there is no solution like this in Ireland. However, globally, a company called Synaedge, based in Switzerland, offers AI-based video surveillance that includes PPE detection. While they provide this service through their AI-powered analytics, the exact workings of their PPE detection system remain unclear.

My system uses live video processing and can trigger immediate alerts when a safety violation occurs, providing more actionable insights.

Industry Perspective

Paul McGrath, Construction Site Manager

Quote from this individual on the idea

Eoin Malone, Live Monitoring Specialist

“Excellent idea. It would be helpful in identifying helmets and high visibility jackets on construction sites.”

Acknowledgements

- Poster Design NYU
- Technology Icons www.iconscout.com
- Poster Design DesignLabs
- Context Diagram www.creately.com
- Construction Image www.opticvyu.com
- www.synaedge.com