The system architecture for an AI-based system to predict the safety equipment needed for workers in railway yards would include several sub components, including:

1. **Data Collection** which would be responsible for gathering data from various sources such as sensor readings from the railway yards, information from workers, video feeds from cameras, and historical data on accidents and injuries.
2. **Data Preprocessing** which would process the collected data by cleaning and formatting it for use in the model. This may include tasks such as removing outliers, filling in missing data, and normalizing numerical values.
3. **Model Training** where the preprocessed data is used to train a YOLOV5 model that can predict the presence and absence of safety equipment needed for a given worker with optimal levels of accuracy.
4. **Model Validation** where the performance of the model is validated using a separate set of images.

**NEXT SLIDE**

The model is deployed into production environment to make accurate detections in real time.

1. The system would have a robust **data storage** component, which would store all the raw and preprocessed data, and would be optimized for fast and secure data retrieval.
2. A **user interface** has been developed for managers and safety officers to view any safety equipment violation detected by the model.
3. The solution would have an **alarm system** that would alert managers and safety officers in case of any safety equipment violation.
4. Continuously **monitoring** the deployed system to ensure it is functioning correctly and making accurate predictions.
5. **Updating the YOLOV5 model** with new data and retraining as necessary to improve the accuracy of predictions over time.
6. A robust **security system** would be implemented to protect the system from unauthorized access and to ensure the confidentiality and integrity of the data.
7. The system would be deployed in **production environment** using techniques like containerization and orchestration to ensure scalability and reliability.

The Solution can be deployed at your own yards on a **capex model** or at your customer’s yards in a “**As a Service**” model giving you a “**delta**” in services pricing.

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* The cost of cameras for AI in railway yard worker safety can vary depending on the specific type of camera and its features. Generally, the cost of cameras for this application can range from about 3-4 thousand Rupees for a basic camera to about 30-40 thousand Rupees for a high-end camera.
* Factors that can affect the cost of the camera include resolution, field of view, and additional features such as night vision and weather resistance.
* The field of view of the camera is an important consideration for AI in railway yard worker safety. A wider field of view allows the camera to capture more of the area and can be useful in detecting potential violations. A narrow field of view, on the other hand, can provide higher resolution images and can be useful in identifying specific details of violation that has occurred. It is recommended to use high-resolution cameras with wide-angle lenses in order to cover the biggest possible area and detect potential safety violations.

As Wabtec is largely prevalent in the railways and other heavy duty manufacturing and servicing sector, and has set up a large chain of workspaces all over India and abroad, our proposed solution will help improve the safety of industrial workers including WABTEC employees, contractors, WABTEC’s customer employees.