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## Automatic and Real-time detection for PPE Kit Detection or Image Identification

### Client Profile

Client is a growing Automation Company. The Company has a rapidly growing customer base and offers many services to its customers. The Company offers attractive Automated Device to its customers.

### The Business Challenge

For practitioners and researchers across the world, safety is a major concern. Workers are still exposed to safety dangers in construction work environments, even after risk assessments have been completed and suitable controls have been applied. In this situation, Personal Protective Equipment (PPE) is critical. The automatic and real-time identification of worker non-compliance with PPE is a major concern.

### Canspirit Predictive Analytics Approach

We proposed an automatic and real-time detection solution to determine whether an Employee/Worker is wearing proper PPE as per the regulations proposed by the company.

After analyzing the business problem, our focus was on Vision API model to detect the PPE kit:

### A sample data of PPE Detection and Evaluation to decide whether the Model is effective:




Face Detection: It detects multiple faces within an image along with the associated key facial attributes such as emotional state or wearing headwear. 📍

Detect image properties: The Image Properties feature detects general attributes of the image, such as dominant color. 📍


Detect multiple objects: The Vision API can detect and extract multiple objects in an image with Object Localization.

Object localization identifies multiple objects in an image and provides a *LocalizedObjectAnnotation* for each object in the image. Each *LocalizedObjectAnnotation* identifies information about the object, the position of the object, and rectangular bounds for the region of the image that contains the object. 📍

### Technologies and Tools

- Google Cloud
- Google Cloud Console, Cloud Vision API 

### Challenges and Solutions

- The customer did not have a single source of truth, so combining the data from various sources was a challenge.
- Data set and training of model was done using the company's requirement and PPE Kit regulations to meet the requirements 

### Business Benefits

- The Company was able to track their Employee/Worker safety measures.
- Prevention of accident collateral reduced up to 40%.
- Worker/Employee followed disciplinary rules which improved productivity

### Bottom Line

**Canspirit** leveraged its Data Science, Big data and machine learning skills to build an Automatic and Real-time detection for PPE Kit Detection or Image Identification

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