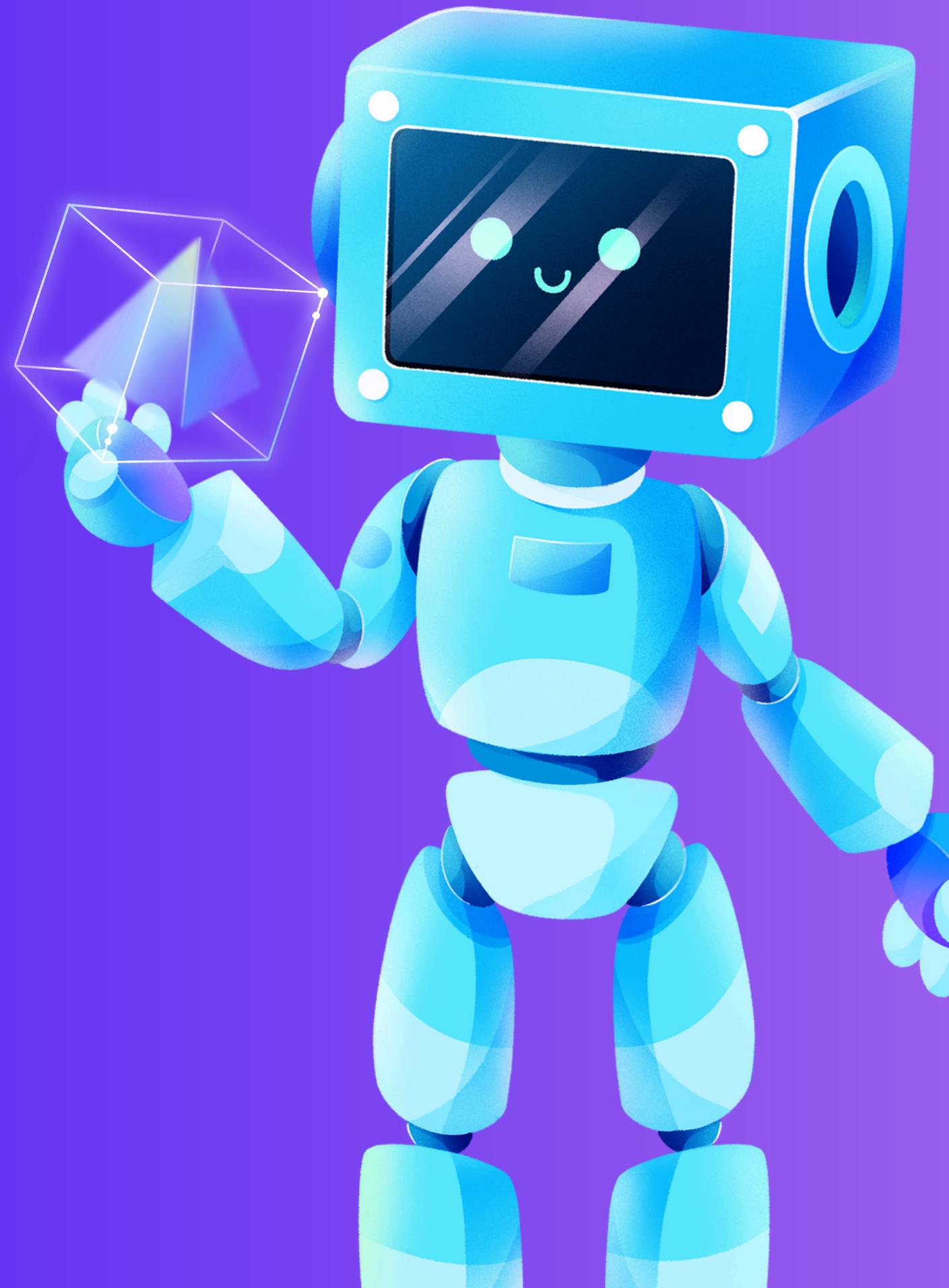


# OBJECT RECOGNITION

## SYSTEM

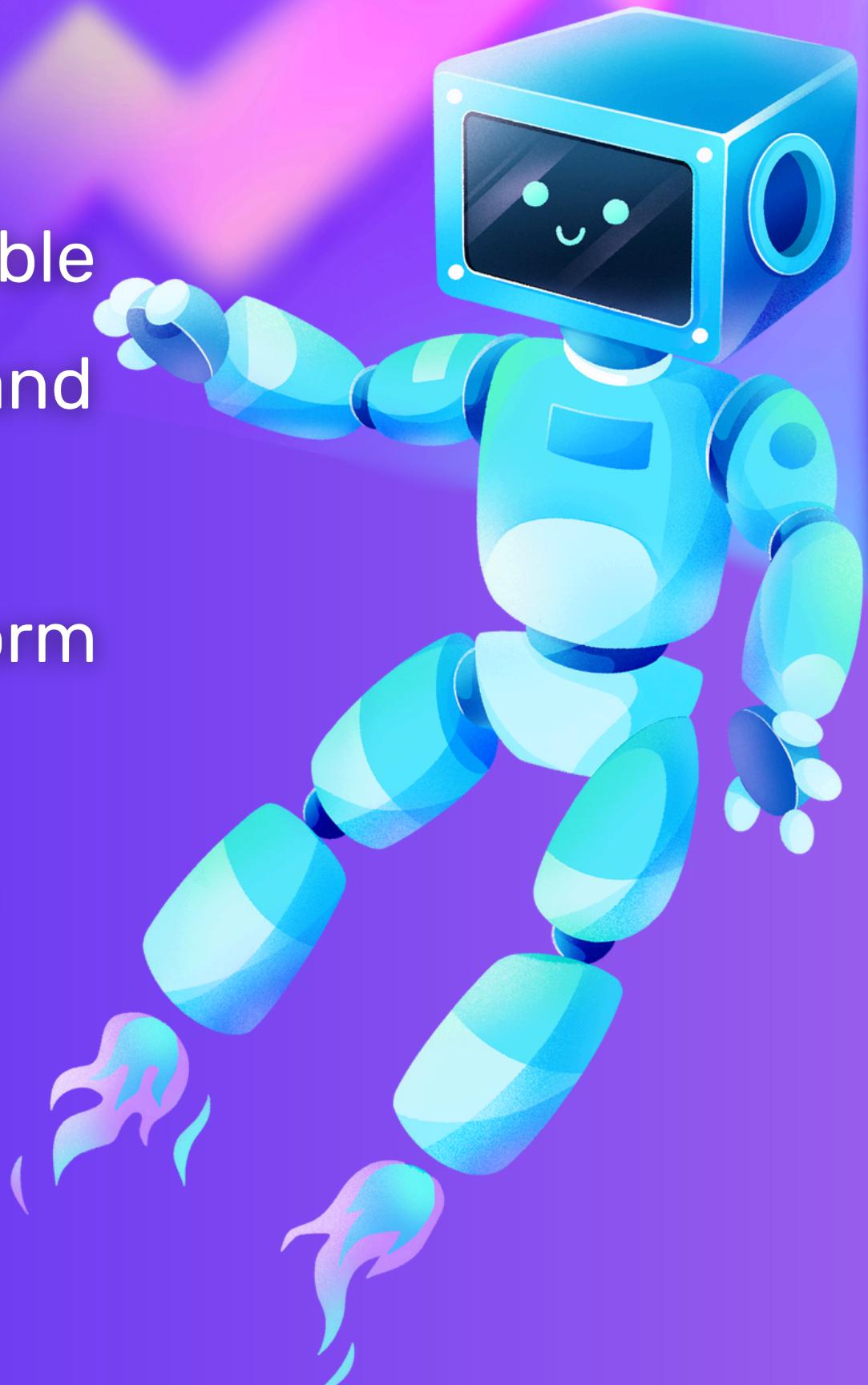
INFOSYS INTERNSHIP

ARTIFICIAL INTELLIGENCE DOMAIN



# INTRODUCTION

- **Vision AI** is a cutting-edge platform designed for comprehensive object detection.
- Whether you're a novice or an expert, Vision AI is accessible to all users, making it easy to work with images, videos, and live feeds.
- Revolutionize object detection with an easy to use platform for detecting and deploying custom models.
- Enjoy a platform-independent system with a responsive design, custom & pre-trained models, and collaborative model sharing.



# Key Features

- **Easy Accessibility**

Our advanced object detection system is designed for everyone, requiring no technical expertise to get started.

- **Custom Solutions**

Train object detection models according to your specific needs and goals.

- **Effortless Training**

Train object detection models effortlessly by simply uploading your images.

- **Collaborative Sharing**

Share custom-trained models with the community, making them accessible to all users.

# Use Cases

## INVENTORY MANAGEMENT

Automatically identify and track items in a warehouse or store, improving accuracy and efficiency in inventory audits.

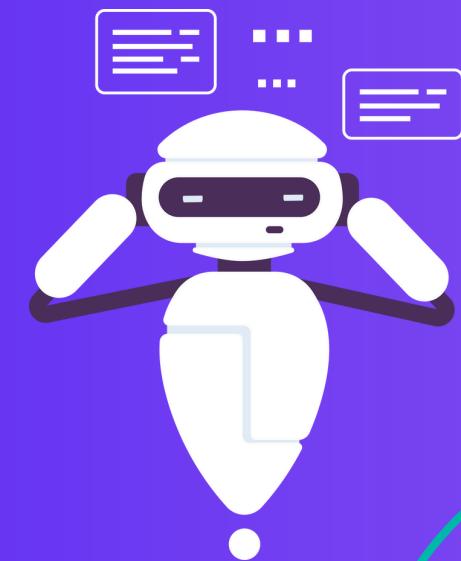
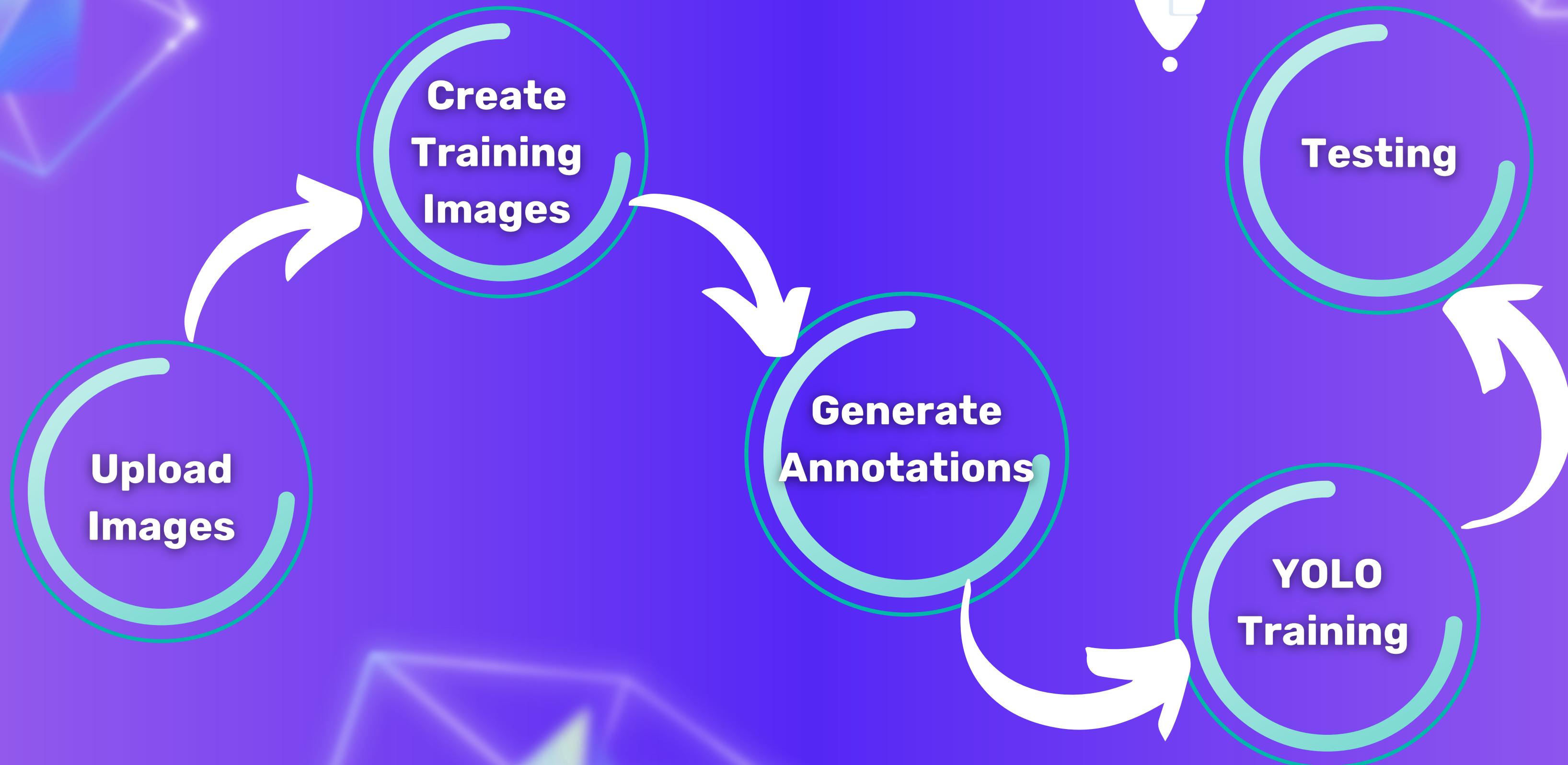
## SECURITY SURVEILLANCE

Detect and recognize unauthorized persons or objects in real-time, enhancing security measures in sensitive areas.

## TRAFFIC MANAGEMENT

Automatically detect vehicles on roads, helping to manage traffic flow, reduce congestion, and optimize traffic signal timings.

# Training Algorithm



# Working of Model

## Detection

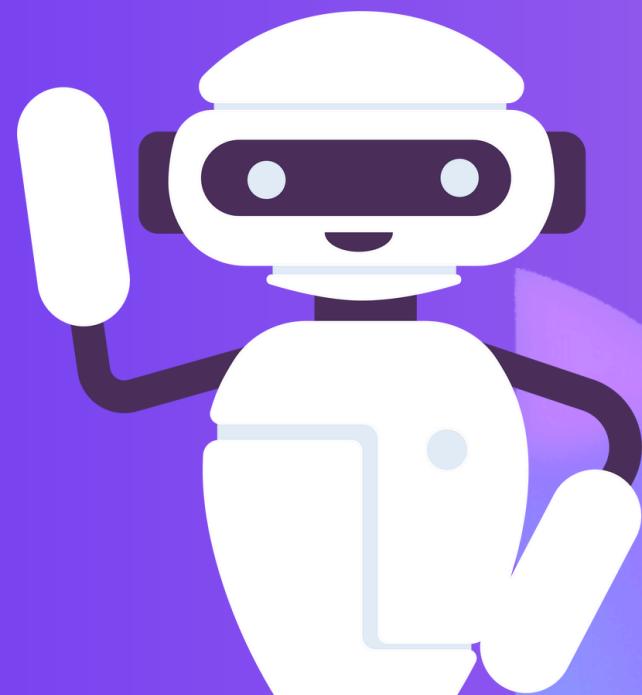
- **Preprocessing:** Resizes and normalizes the input image.
- **Forward Pass:** Passes the image through the trained model to extract features.
- **Bounding Box Prediction:** Predicts bounding boxes, class labels, and confidence scores.
- **Non-Maximum Suppression:** Filters and retains the best bounding boxes based on confidence scores.

## Training

- **Data Ingestion:** Reads and preprocesses images from the dataset.
- **Augmentation and Batching:** Applies data augmentation and creates training batches.
- **Prediction and Loss Calculation:** Predicts anchor boxes, calculates loss comparing actual vs. predicted boxes.
- **Optimization:** Iteratively reduces loss and improves accuracy over multiple epochs.

# Tech Stacks

- (1) **Frontend:** HTML, CSS, Javascript
- (2) **Backend:** Django framework, Python
- (3) **Object Detection Model:** YOLOv8



# PROJECT DEMO

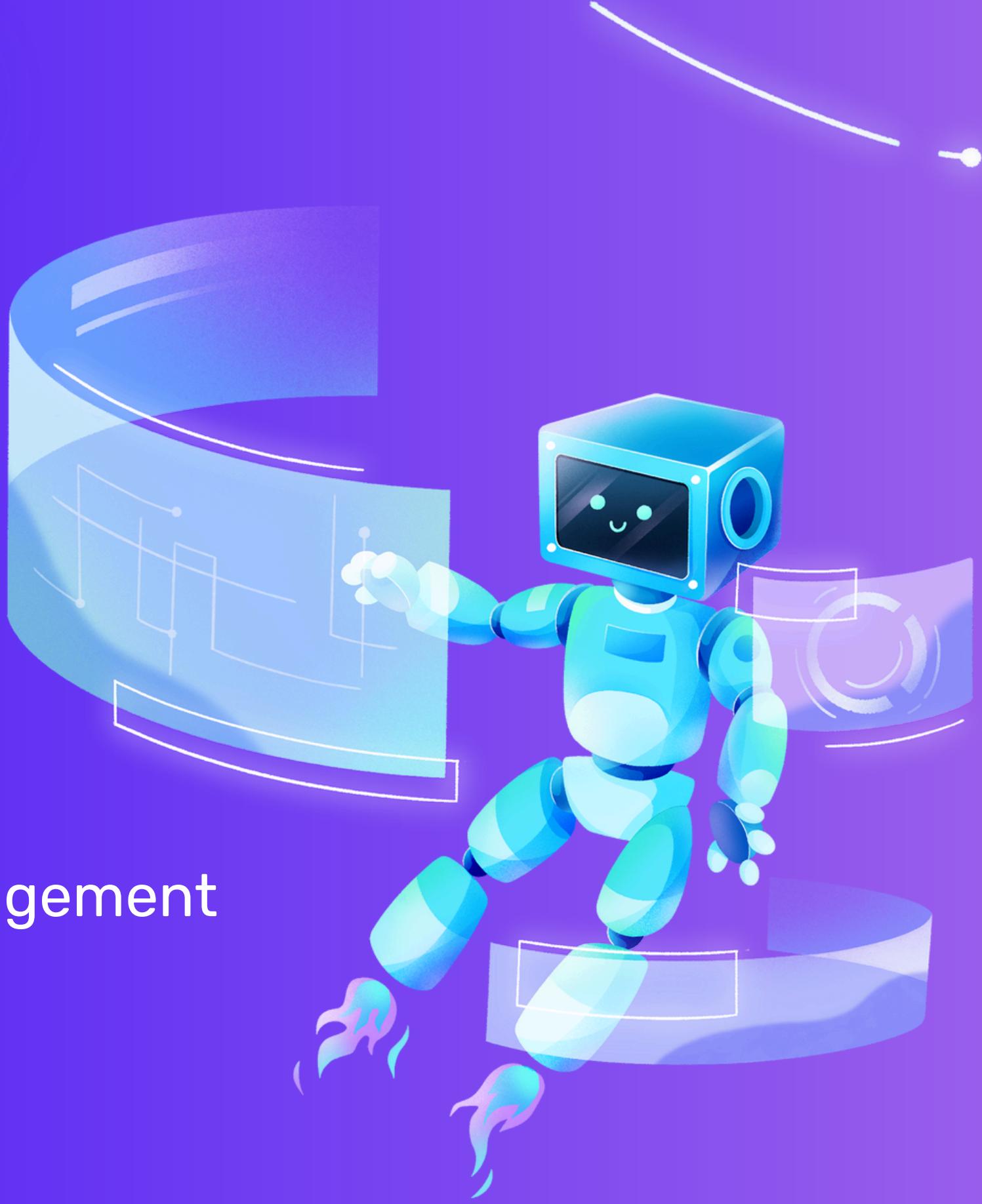


# Future Scope

- **Enhanced Training:** Develop improved algorithms to achieve higher accuracy and efficiency.
- **Model Options:** Offer both public and private models to cater to different user needs ensuring privacy.
- **APIs:** Provide robust object detection APIs for seamless integration with various applications and platforms.
- **Collaborative Development:** Allowing users to work together on improving and refining object detection models.

# Key Takeaways

- Understanding of YOLOv8
- Website Development Skills
- Model Training and Management
- Practical Applications Ideation
- Team Collaboration and Project Management
- Data Handling and Processing



# Notable People and Contributions



## UI AND BACKEND INTEGRATION

**UI Design:** Pratik and Suchismita

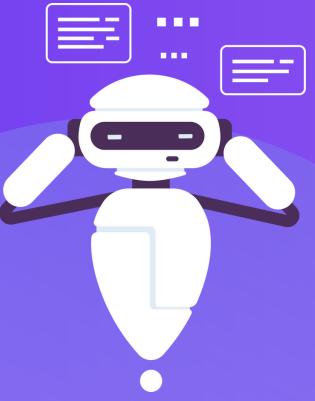
**Frontend:** Infant Hilda, Ranjit and Suchismita

**Backend:** Pratik



## MODEL RESEARCH AND TRAINING

Rishith,  
Shanmagaguru, and  
Pratik



## DATASET COLLECTION

Pratik,  
Shanmagaguru,  
Rishith,  
Suchismita,  
Infant Hilda,  
Diya, and Ranjit

THANK  
YOU!

