**Project Ideas**

Here are some project ideas for classification, detection, and segmentation tasks in computer vision.

### **1. Classification Projects**

* **Emotion Recognition**: Students can create a dataset by capturing photos of facial expressions representing different emotions (happy, sad, angry, etc.) and develop a model to classify the emotion in each image.
* **Plant Species Identification**: Compile a dataset of various plant leaves or flowers and build a classifier to identify the species from the images.
* **Handwritten Digit Recognition**: Students can write digits (0-9) on paper, take pictures, and develop a model to classify the digit in each image, similar to the MNIST dataset.
* **Traffic Sign Classification**: Create a dataset of different traffic signs by taking photos in and around the campus or city and develop a model to classify the type of sign.

### **2. Detection Projects**

* **Parking Space Occupancy Detection**: Students can take pictures of a parking area to create a dataset indicating occupied and vacant spaces, and develop a model to detect the status of parking spaces.
* **Face Detection in Classroom**: Create a dataset with images of classroom settings and develop a model to detect students' faces.
* **Object Detection in a Supermarket**: Capture images in a supermarket setting and annotate common items like fruits, vegetables, or packaged products for detection.
* **Wildlife Detection**: Assemble a dataset of wildlife images (can be sourced from parks or zoos) and develop a model to detect different animals in the images.

### **3. Segmentation Projects**

* **Road Segmentation for Autonomous Driving**: Take pictures of streets and roads and develop a model to segment the road from the rest of the image, which can be used in autonomous vehicle navigation.
* **Segmentation of Objects in Household Settings**: Create a dataset by taking pictures of rooms in a house and develop a model to segment different household objects (furniture, appliances, etc.).
* **Medical Image Segmentation**: If students have access to medical images (like X-rays or MRI scans), they can develop a model to segment specific areas, such as bones or organs. Note: This requires appropriate permissions and data handling.
* **Fashion Item Segmentation**: Create a dataset of fashion items (clothes, shoes, accessories) and develop a model to segment each item from the image background.

### **Notes for Students:**

* **Data Quality**: Ensure the images are varied and cover different scenarios, lighting conditions, and angles for robust model training.
* **Ethical Considerations**: Be mindful of privacy and ethical considerations, especially when capturing images of people or using sensitive data.
* **Creative Approach**: Feel free to be creative and come up with unique angles or elements in your dataset to make your project stand out.