CV / VLM

Unit 1: Introduction to Computer Vision (CV)

1.3.1

Intro to Image Classification

Introduction to types of CV tasks

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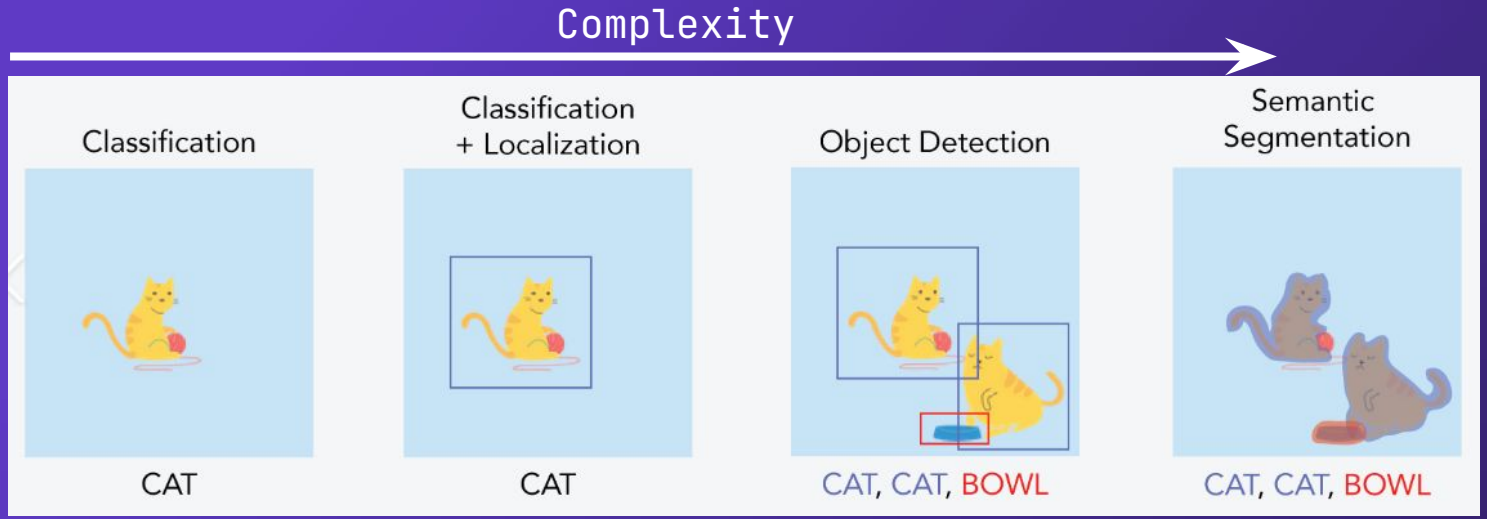
Common Problem Types in Computer Vision



Features	Classification	Bounding Box	Multiple objects	Segment Mask
Applications	Image Tagging, Scene Understanding, Content moderation		Robot navigation, Facial Recognition Self Driving Cars	Medical Image Diagnosis Aerial Image processing

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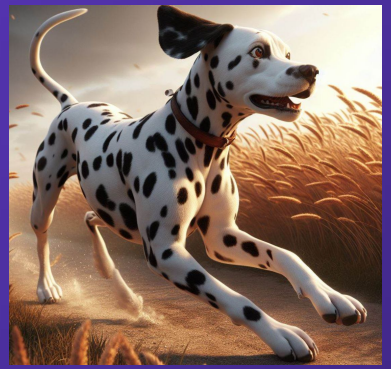
What is Image Classification?

Image classification/recognition is a class of computer vision problem wherein a model is trained to recognize categories or labels in images. It can identify patterns within the images and assign them to their most applicable category.

E.g. Species Tagging

Image			
Labels	Dog, Boxer	Dog, Dalmatian	Cat, Persian

Adapted from (PDF) Vision Transformer (ViT)-based Applications in Image Classification (researchgate.net)

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What is Image Classification? (cont.)

Other example applications of image classification.

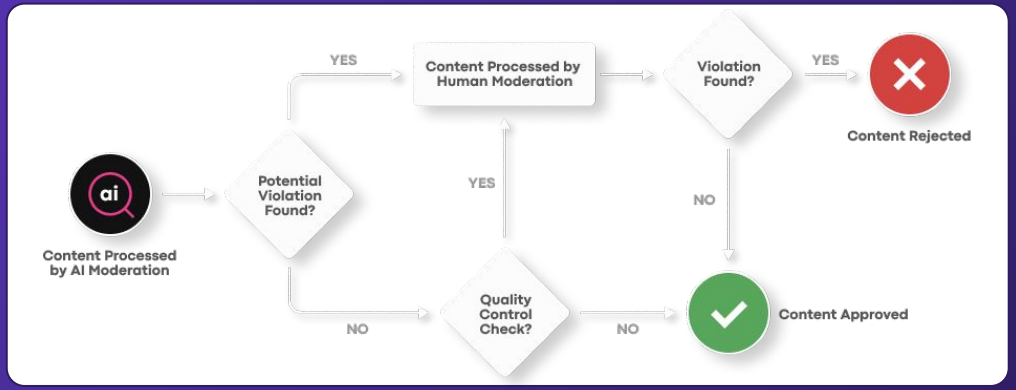
- **Identifying plant health**

Wilting

Healthy

- **Content Moderation** NSFW flags

Example of Video/Image moderation flow



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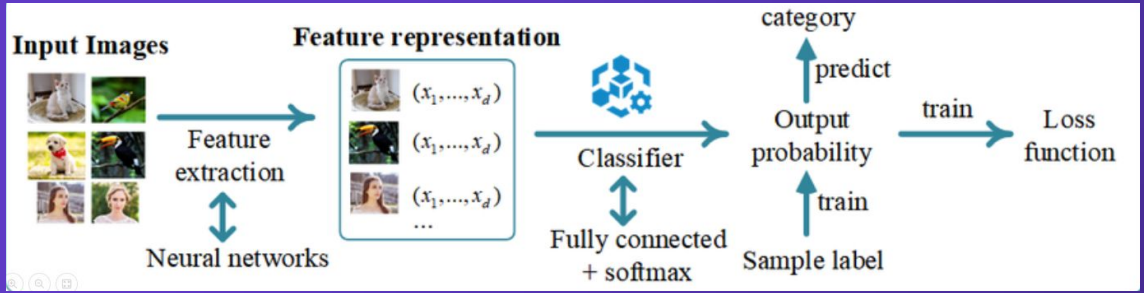
How Does Image Classification Work?

Broadly, most image classification algorithms do the following:



Overview of image classification.

1. **Feature Extraction**
   Extract specific patterns, edges, characteristics, etc. that are representative of the objects.

2. **Classifier**
   Based on the extracted features, determine which class the object belongs to using a Softmax classifier.

Convolutional Neural Networks (CNNs) are often used to accomplish this.

Adapted from (PDF) Vision Transformer (ViT)-based Applications in Image Classification (researchgate.net)

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