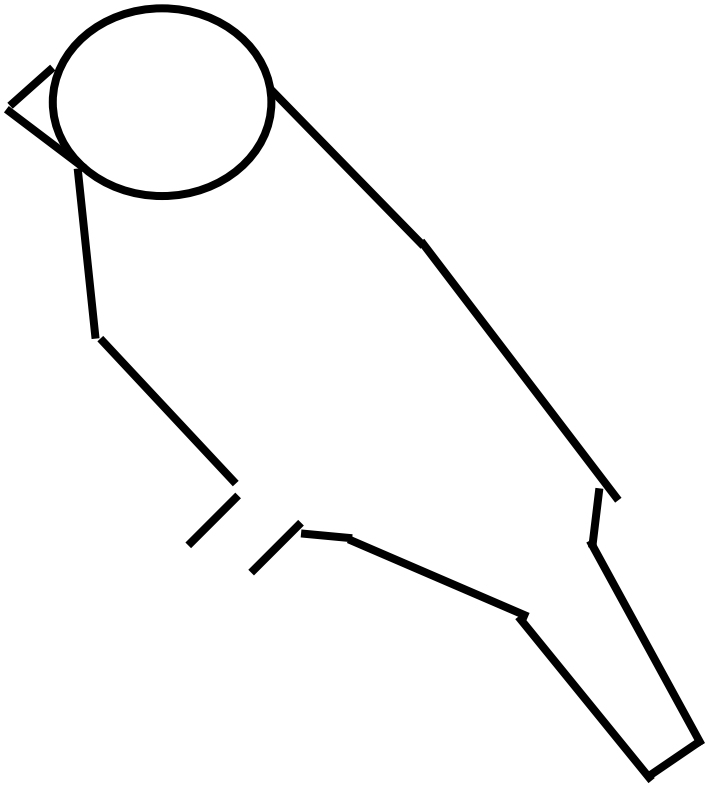
Convolutional Neural Networks

What is a CNN?



How do humans recognize images?

- Observe edges
- Extract features (beak, wing, claws, etc.)
- Don't memorize exact images

How do computers recognize images?

- Observe edges
- Extract features (beak, wing, claws, etc.)
- Don't memorize exact images

Convolutional Neural Network

- **Convolution Layer**: Detects features like edges and corners.
- **Pooling Layer**: Reduces complexity while keeping key information.
- **Fully Connected Layer**: Makes predictions based on extracted features

CNNs use small filters (kernels) that slide over an image, scanning small sections at a time to detect patterns like edges and textures. As these filters move (convolve) across the image, they create feature maps, which highlight important details while reducing unnecessary information.

Convolutional Neural Network

CNN Use Cases

- Face Recognition (e.g., iPhone Face ID)
- Medical Imaging (detecting cancer in X-rays)
- Self-Driving Cars (recognizing stop signs, pedestrians)

Google Quick Draw!