

Image Feature Extraction: Edge & Corner Detection



Edge Detection

Boundaries where intensity changes sharply

Detection Operators:

Sobel

Prewitt

Canny



Corner Detection

Points where edges intersect or change direction rapidly

Detection Method:

Harris Corner Detector: Identifies distinctive points for matching



Feature Hierarchy

Low-level features (edges, corners) are fundamental for higher-level understanding
Foundation for object detection and image matching



Robust to illumination changes



Resilient to minor transformations



Visual Examples



Edge Detection - Building Example

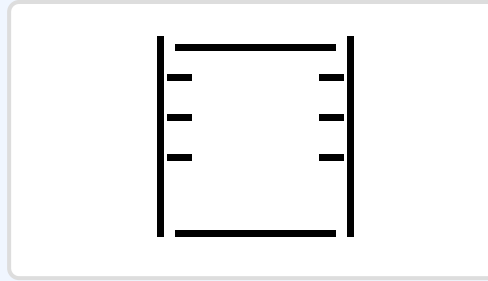
Original Image

Sobel/Canny Edge

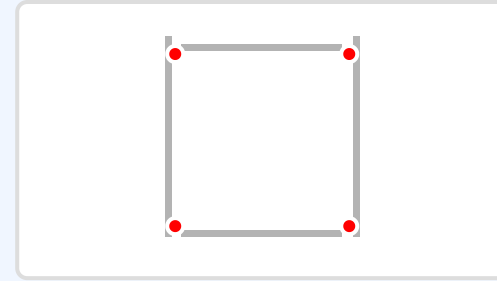
Harris Corner



Full color building with texture and details



Outlines extracted - object boundaries detected



Key points identified - useful for matching



Use Cases

Object Recognition



Edge detection helps identify object boundaries for classification and recognition

Image Matching



Corner points serve as landmarks for matching images across different views

Motion Tracking



Corners are stable features that can be tracked across video frames