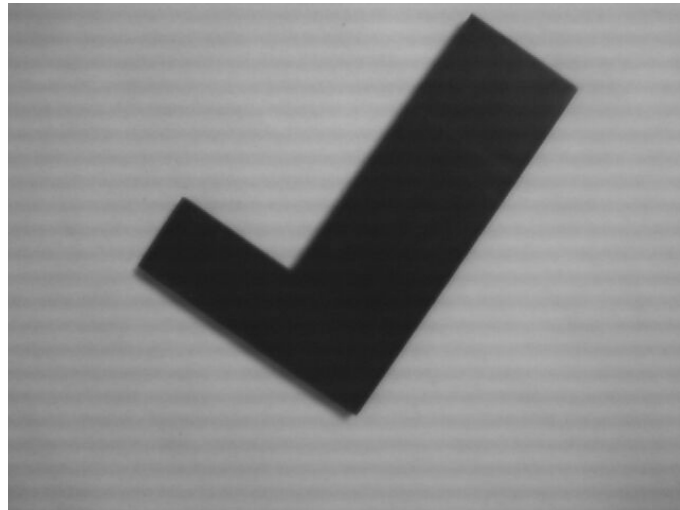# Flat Rigid Part Recognition

Robert B. Fisher
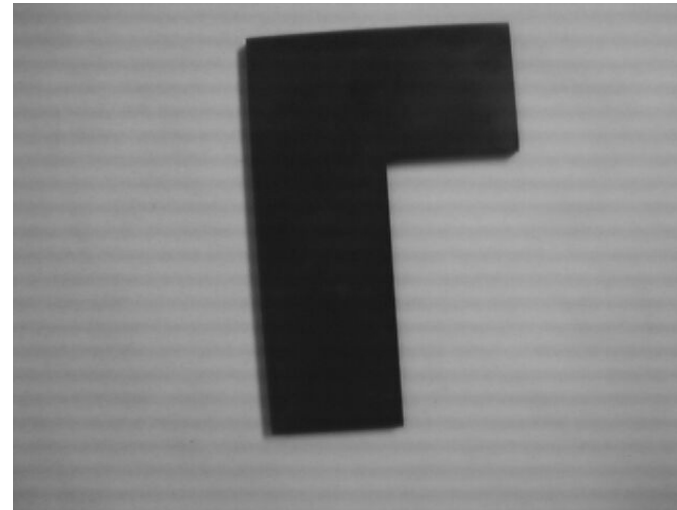
School of Informatics

University of Edinburgh

Flat Rigid Part Recognition Overview

How to discriminate between and also estimate image positions?

vs

Geometric Model-based Object Recognition

Overview

Geometric Model-based Rigid Object Recognition:
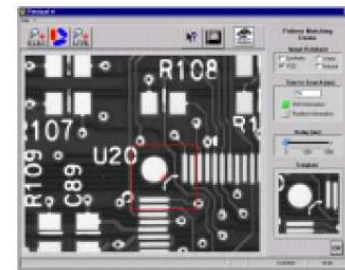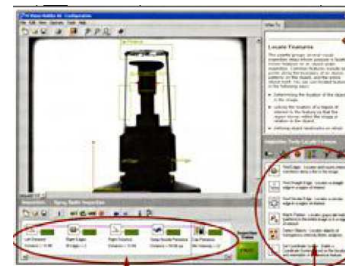
Geometric description

Model matching

Pose estimation

Match verification

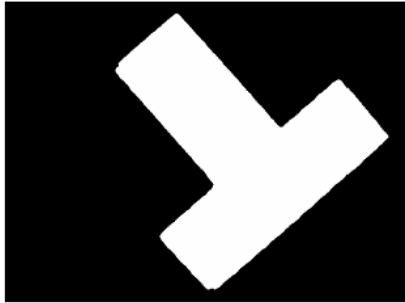# Motivation - automated visual inspection

Manufacturing

- High speed product verification

- Largest use of computer vision systems worldwide

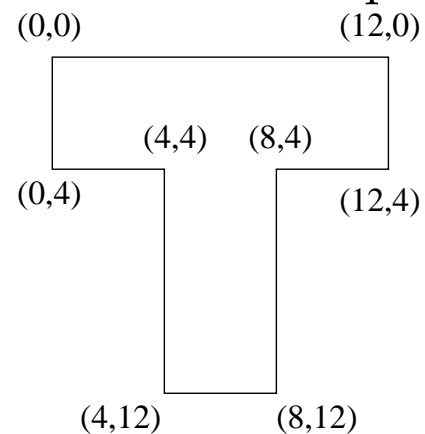- Most western manufacturing has some visual quality control

Introduction
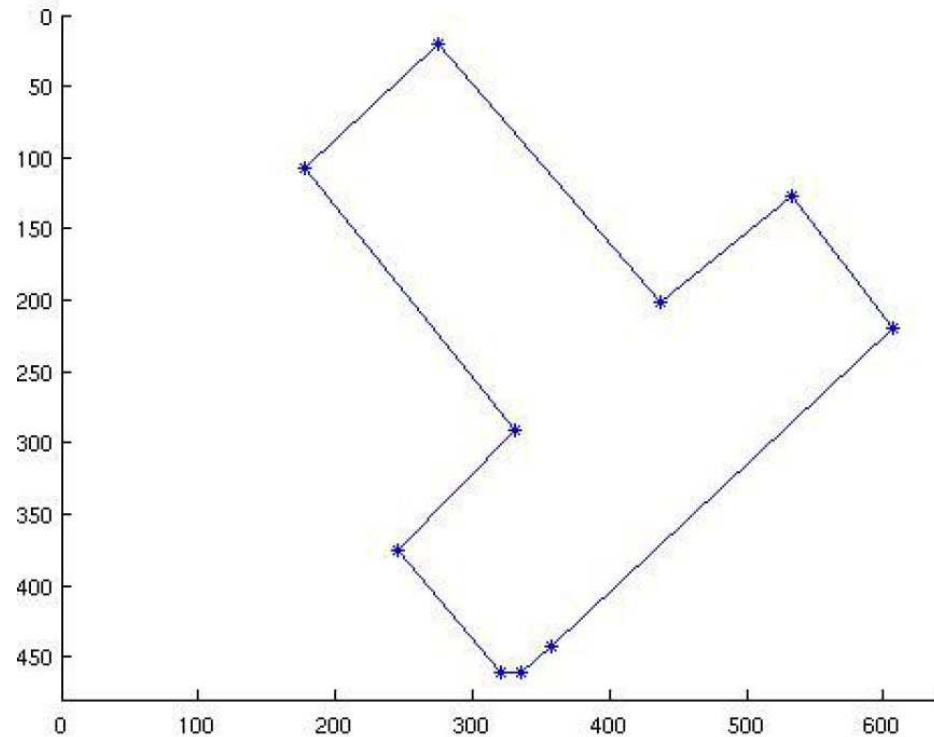
Given:

Isolated binary image object

Assume:

1. Geometric shape models for parts to be recognized

(0,0)   (12,0)

(4,4)   (8,4)

(0,4)   (12,4)

(4,12)   (8,12)

2. Image feature positions

Issues - how to:

1. Match image and model features?

2. Estimate transformation mapping model onto data?

Discussion

- Efficient if good property matching tests

- Suitable for 50% (estimated) flat parts

- Similar techniques for shapes other than straight lines: circular arcs, corners, holes, ...

- Extendable to 3D

- Extensions for perspective projection