

Introduction to Vision and Robotics

Vision Practical: Coin Counter

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1 Introduction

The purpose of this practical is to develop a program in Matlab that recognises and classifies several objects in an image. These objects can be coins or other small items, and the program must segment the image, identify each of the objects, and output the total value (in pounds and pence) of the objects in the image.

All of the images are taken from a downward facing camera viewing a scene containing the objects on a static background. We were provided with a set of 14 sample images on which to train our classifier (see Figure 1 for an example).

The following are the objects and associated values that may or may not be present in any given image:

- one and two pound pieces
- 50, 20, and 5 pence pieces
- washer with small hole (75p)
- washer with large hole (25p)
- angle bracket (2p)
- AAA battery (no value)
- nut (no value)



Figure 1: This is one of the test images given to train the classifier.

We approached this problem by dividing it into three distinct stages: background segmentation, object detection, and object classification.

2 Methods

2.1 Background Segmentation

2.2 Object Detection

2.3 Classification

3 Results

4 Discussion

Appendix

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code can go inside these tags
\begin{verbatim}
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