COMP3204/COMP6223 - Computer Vision
Revision Lecture

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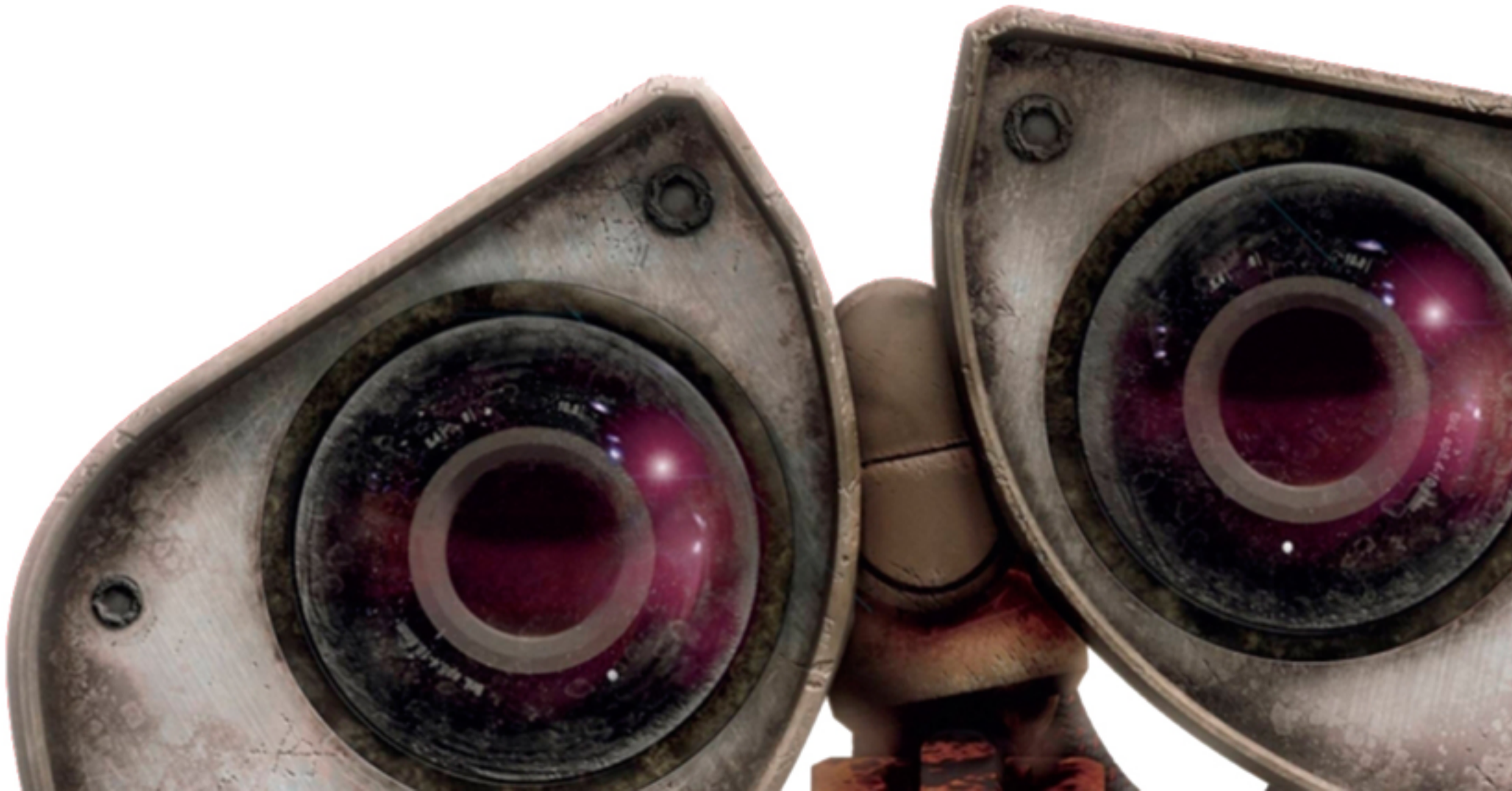

Tuesday 19th January

1430-1630

Exam Format

- 2 hours duration
- Choose 3 questions from 6
- Each question worth 33 marks
- Mark wrote 3; I wrote 3
  - Expect that Mark's will *typically* cover lower level vision & mine will cover higher level vision
  - but, there will probably be some overlap!

Typical mark scheme

- 80% from lectures and notes; 20% from independent reading
  - Most questions will be broken down into sub-parts
    - Mark has a tendency to write a single question with 33 marks!
- The marks for each question are **there to help you**
  - Use them to judge how much to write and how much time to spend

- Enter at least **one input search value**: enter part or all of the value in the text box or use the drop-down selection.
- Only **one** search input allowed: when entering a search value the other search inputs are disabled (and cleared if appropriate).
- To re-enable another search input, clear or un-select the current search input.
- If you see a problem with a past paper, please contact Hartley Library on 22180.

Unit Code: --Select-- **Paper Code:** --Select--

Unit Title: Computer vision

Computer vision

Search Clear

Please report any papers that do not read in Adobe Acrobat, or papers having the wrong course/paper codes to the Hartley Library team, stating paper code, year and version of Acrobat used.

Returned list size is limited to 100 past examination papers.

There are 16,667 past examination papers online.

Cannot find it? Try another search, but if you still cannot find it, contact your school first to see if the paper has been published to this database.

Search Results - 17 papers

Unit Code	Unit Title
COMP3005	**Computer Vision**
COMP3005W1 **2013-14/S2** 43k | COMP3005W1 **2012-13/S2** 181k | COMP3005W1 **2011-12/S2** 63k | COMP3005W1 **2010-11/S2** 12k COMP3005W1 **2009-10/S2** 652k | COMP3005W1 **2008-09/S2** 20k | COMP3005W1 **2007-08/S2** 124k | COMP3005W1 **2006-07/S2** 108k COMP3005W1 **2005-06/S2** 1.9M | cm306w1 **2002-03/S2** 267k | cm306w1 **2001-02/S2** 191k | cm306w1 **2000-01/S2** 259k cm306w1 **1999-00/S2** 340k | cm306w1 **1998-99/S2** 120k	
el424	**Computer vision**
el424w1 **1999-00/S2** 63k | el424w1 **1998-99/S2** 39k	
ez424	**Computer vision**
ez424w1 **2002-03/S2** 197k	

4.

Feature morphology and segmentation

(a) **Describe** with the aid of sketches three different morphologies of image feature. [6 marks]

(b) **Describe** two strategies for segmenting an image. [13 marks]

(c) **Compare** the two strategies from the previous answer, highlighting advantages and disadvantages of one with respect to the other. [8 marks]

(d) **Identify** parameters that will need to be set, either manually or automatically for the segmentation methods you described and strategies to choose them. [6 marks]

5.

Eigenfaces and PCA: *Eigenfaces uses principle component analysis to reduce the dimensionality of a feature based on the raw grey-level pixel values in a face image. Face recognition is achieved by training a classifier on these low-dimensional features.*

(a) **Describe** what Eigenvalues and Eigenvectors are, and in terms of the distribution of a set of data points describe what they represent. . [7 marks]

(b) For a 2x2 covariance matrix, demonstrate with the help of diagrams the effect of different values within the covariance matrix on the principal axes. [6 marks]

(c) **Provide** a description of the steps to achieving dimensionality reduction using PCA. [10 marks]

(d) **Describe** two classification approaches that could be used with the reduced dimension features to build a face-recognition system. What are the advantages and disadvantages of the two techniques? [10 marks]

Visual Words

(a) **Describe** in detail an approach to learning a set of "Visual Words" from a local feature like SIFT. [11 marks]

(b) **Describe** what is meant by vector-quantisation. [3 marks]

(c) **Describe** how you might use a Bag-of-Visual-Words to create a system for searching large numbers of images. Relate your answer to the techniques used in text indexing and search. [11 marks]

(d) One key parameter of a Bag-of-Visual-Words representation is the size of the vocabulary. Provide details of the trade-offs in vocabulary size for the tasks of (a) image search and (b) image classification. [8 marks]

Questions