



Project 1 Terrorists

- Take photographs of your group and maybe other participants
- A few of you are terrorists and need to be identified when passing a security screen
- Aim is positive identification of a few faces
- Problem is that terrorists try to disguise themselves.
- Can you positively identify the disguised person?
- What kind of disguises are difficult to handle and can the algorithm be improved in this respect?
- Remarks: Difficulty medium



Project 2 Keys

- Input: images of keys, and reference images
- Try to match keys to reference images
- Output labeled image (with probabilities?)
- Remarks: Difficulty variable depending on input image definition.



Project 3 Sport highlights

- Input: video sequence of sports event
- Aim to detect key events such as goals (or potting of balls in snooker/pool)
- Output: edited video clip with only key events
- Remarks: Difficulty medium to hard.
- Note see New Scientist article

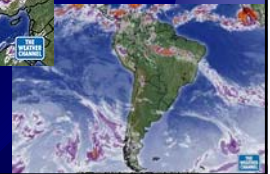
Sports events



Project 4 Landsat classification

- Input: Landsat images of terrain, plus sample images of fields/ sea, forest etc
- Aim: segmentation of scene based on texture (and colour)
- Additional goal: identification of key features such as cave openings etc
- Output: labeled scene
- Remarks: Difficulty - reasonably easy

Satellite images



Project 5 Traffic simulation

- Input: model of city street or highway map
- Aim: simulation of traffic flow, with intersection control
- Additional feature: driver performance-aggressive/ cautious behaviour
- Output: graphics of traffic flow + traffic light control strategy (measure of average speed?)

Note see article from New Scientist

Cautious drivers



Project 6 Avatar/ dancer

- Aim: to place some avatars in a street scene
- Input: Street scene
- Aim: generation of some realistic human figures walking about in street scene
- Output: video clip with avatars moving
- Alternative, avatar walking up stairs, dancer dancing
- Remarks: Difficulty hard

Project 7 Top model

- Input: photos of participants and fashion models from web
- Aim: classification of models v. normal unattractive faces for example using ratio of proportions of facial features
- Sub goal: what makes models apparently attractive (which features) and can you simulate this by distorting facial images
- Output: images of participants with attractiveness score
- Difficulty medium

Are these models?



Project 8 Raster to vector

- Raster to vector conversion
- Starting from a reasonably complex drawing (straight lines, circles) saved in raster format, decompose it in the composite vectors (and PostScript instructions) from which it was formed
- Input: raster image
- Output: vector description in PS
- Difficult: from fairly easy to very difficult

Project 9 Money, money money

- Counting money.
- Input: Photo of coins (Euro)Cent perspective view, non-uniform lighting, eventual partial covering)
- Task: Recognise the coins and count the total sum.
- Output: The sum, and also the recognition statistics (accuracy / false positive rate etc) of the implemented method.
- Difficulty: Medium

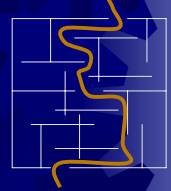


Project 10 n D cube

- 2D(3D) presentation of the n -dimensional cube.
- Input: the number n and the parameters of the presentation
- Task: To write a program with a simple GUI, which presents the n D unit cube (e.g., showing its selected cross-sections).
- Output: image sequence showing the cross-sections.
- Difficulty: medium

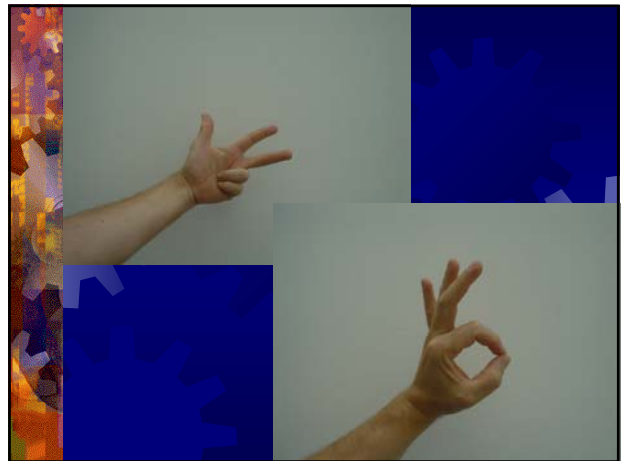
Project 11 No way out

- Labyrinth.
- Input: Digital image of a labyrinth (of horizontal and vertical lines or more complex). Note: loops are permitted.
- Task: Find the way out.
- Output: The found way.
- Difficulty: Medium



Project 12: V for Victory

- Manual signs.
- Input: A set of digital images of a hand showing different signs (the background is the same in each)
- Task: To recognise the fingers.
- Output: A line draw showing the fingers recognised in the image.
- Difficulty: quite hard.



Project 13 Grim grins

- Smiling faces.
- Input: a set of photos of the same person with different face expressions and the information that some of them are smiling faces
- Task: to write a program (e.g., neural network) recognising the smiling faces of the same person
- Output: smiling or not, and the statistics of the implemented method.
- Difficulty: hard



Project 14 Count roofs

- Counting roofs.
- Input: a digital photo of roofs
- Task: count all of roofs in the image, give every roof a unique id (number)
- Output: identifies roofs.
- Difficulty: hard



Project 15 Count traffic

- Extract moving cars
- Input: a sequence of images showing a street with moving cars
- Task: Calculate number / time unit (e.g. 25 frames), calculate speed, approximate number of cars or speed of cars where queuing starts, display as time chart
- Output: Display as animation, give the quantitative information

