Welcome to Computer Vision 102

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Computer Vision

Assume: images, image capture, simple image processing - hence 102

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Research Interests:
    3D computer vision/video analysis

And lots of help from: T. Breckon, L. Horna, S. Rodnes, E. Vafeias

The Empty Boxes

Most slides have an empty $\boxed{?}$

Neuroscience shows a connection between motion and memory systems

Educational experience shows activity improves retention

Most slides have a box to fill in with an important concept word: to emphasise the concept, stimulate the memory & keep you awake.
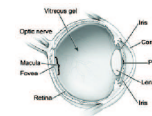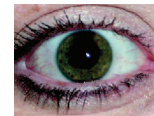PS: Educational evidence shows retention drops to c. 10% after 30 min. So take a break!

Problem of Vision - complexity

Human Vision:

- Builtin 3D stereo & video
- Excellent visual reasoning
- Not well understood
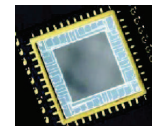
$\boxed{?}$ Vision:

- Hard to get quality 3D
- Noise (environment, sensor)
- Limited, static viewpoints
- Low relative resolution
- Well understood, limited algorithms
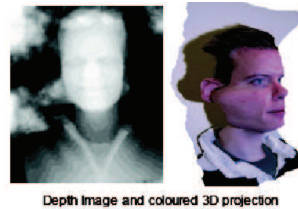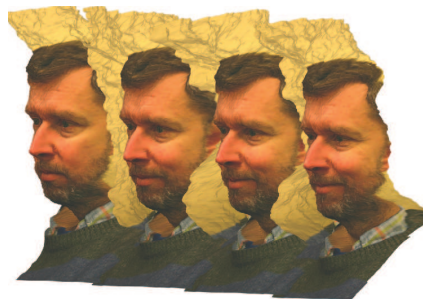
Types of Visual Sensing

RGB Channel Separation

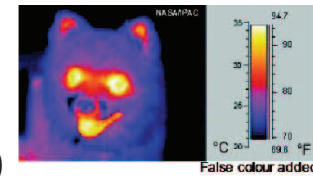1. RGB:

2. ? :

3. Video:

False colour added

4. ? (heat)

5. Infrared (night vision)

Depth Image and coloured 3D projection

6. 3D capture (?)

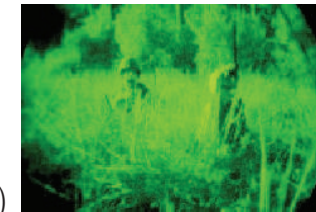7. 3D capture (video)

Seven Example Image Analysis Systems

1. Orthographically viewed rigid 2D objects

2. Orthographically viewed non-rigid 2D objects

3. Video change detection & tracking

4. Video: human ? analysis

5. Recognising 3D objects from range data

6. Recognising 3D objects from stereo data

7. DeepNets for Vision Introduction