Advanced Vision Module

• Overview:
  – “Intelligent processing of visual information”
  – recognition / navigation / inspection in 2D/3D

• Context (requirements):
  – Introduction to Vision and Robotics (IVR)
  – 1\textsuperscript{st}/2\textsuperscript{nd} year maths (geometry, matrix algebra, trig.)
  – Basic understanding of physics and programming concepts

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What can you do with vision?

- **3D content** { games | movies | visualisation }

- Surveillance

- Traditional Engineering Problems
  - inspection / quality control

- Image Processing
  - noise removal, enhancement, etc.

**Overall: processing visual data**
Syllabus

• 6 vision systems:
  – Orthographically viewed non-rigid 2D objects
  – Orthographically viewed rigid 2D objects
  – 3D objects from range data (recognition)
  – 3D objects from stereo vision (recognition)
  – Video tracking (2D)
  – Video-based behaviour recognition (2D)

• Low, Middle & High Level Vision
  – e.g. pixels -> edges -> 2D / 3D part recognition
Activities

• 16 Lectures
  - lecture notes on-line + video
  - background reading (on-line + textbook)

• 2 Practicals (IPAB lab AT 3.01)
  - 2 programming (groups of 2, Matlab)

• Assessment
  - 2 hour examination (70%)
  - 2 practical assignments (15% each)
Questions - ?

Advanced Vision (AV)
Semester 2 – M/Th 2-3 @ DHT LTA

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