INFO0013 Computer Vision

Introduction
Justus H. Piater

Course Content

Motivating applications:
• match moving
• object recognition?

Required work and evaluation:
• comprehensive programming projects implementing the applications (in groups)
• oral exam in January
Programming Projects

Language: Any openly available language/environment that runs easily on our Linux computers (no C#), plus Matlab. The source code must clearly identify the personal contributions of each member of the group.

Tools: Any open-source libraries may be used, but you must clearly document their use for your program.

The more relevant detail you implement yourself, the less your final grade will depend on the oral exam.

Programming Projects (Continued)

Submission: Submit your source code in a way that we can easily build and run your program. Also include a report (as a PDF file) that describes on a few pages what you did, how you did it, and who did what, and include illustrations of the output generated by your program.

Details are given on the course Web page.

Some Applications of Computer Vision

Some Applications of Computer Vision
Face Detection [Li et al. 2002]

Object Detection and Recognition [PASCAL databases]

Image Retrieval [Tieu and Viola 2000]

Tracking and Counting People
**Tracking a Socker Ball**

Some Applications of Computer Vision

---

**Shape from X**

- Shape from multiple images (stereo → motion)
- Shape from shading
- Shape from texture

Other depth cues:
- focus/defocus, retinal size, motion parallax, shadows, ...

Some Applications of Computer Vision

---

**Shape from Stereo and Structure from Motion** [Pollefeys et al. 2004]

Some Applications of Computer Vision

---

**Structure from Motion: A Complete Example** [Pollefeys et al. 2004]

Some Applications of Computer Vision
How to implement a match mover?

References

C. Liu et al., "Motion Magnification". SIGGRAPH, 2015.