INTRODUCTION TO
COMPUTER GRAPHICS AND INTERACTION

HCI: A brief intro

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Based on DGI12 notes by Carl Henrik Ek

KTH Social SUDOA

⤢ Min/Max

COMPUTER GRAPHICS AND INTERACTION
DH2323 | 6.0 CREDITS

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Course overview

News feed

Schedule

General ▴

   Assessment ▾

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SUDOA

   Course plan etc ⤢

   Honor code ⤢

Course wiki ▴

   Cg Programming

   Maya

   OpenGL and Visual Studio

   OpenGL, Cg and Visual
   Studio 2010

   SVN

SUDOA

Information specific to SUDOA (Stockholm University students)

Relevant lectures

SUDOA HCI Introduction **24th May**, 13:00-14:00, Visualization Studio

Interactive virtual agents **26th May**, 13:00-15:00, Visualization Studio (Guest Lecture: Catharine Oertel, TMH, KTH)

Intelligent agents and robots **1st June**, 10:00-12:00, Visualization Studio (Guest Lecture: Ginevra Castellano, Uppsala University)

Assignment

Write a three page report in English using the Latex document preparation system on a topic of your choice related to HCI.

Examples

Three examples follow. Many more are possible.

1) Report on a topic of your choice from the lecture series on 'Interactive virtual agents'. Do some further research into the area and reflect on how it could be of importance to your continuing studies or how it may impact society. Example paper here.

2) Review a single paper from a conference such as CHI (Computer Human Interaction). Note that in this case, you are reviewing the paper itself in terms of its writing style clarity, content, novelty and so on. In terms of personal reflection, you may consider how your analysis has benefited your writing style, structure or perhaps even the report itself.

3) Review a technique of interest to you from a single paper from a conference such as CHI (Computer Human Interaction). Note that this is different from 2) above, since you are not analysing the paper, but the approach documented in the paper. In this case, you could reflect on why the approach is of relevance to you or the societal impact of the approach (technologies, ethical).

Remember that since the goal is up to you, you can also choose something outside of the above. If in

Lectures

Introduction HCI lecture

Two guest lectures:

Interactive virtual agents
26th May, 13:00-15:00, Visualization Studio
Catharine Oertel, TMH, KTH

Intelligent agents and robots
1st June, 10:00-12:00, Visualization Studio
Ginevra Castellano, Uppsala University
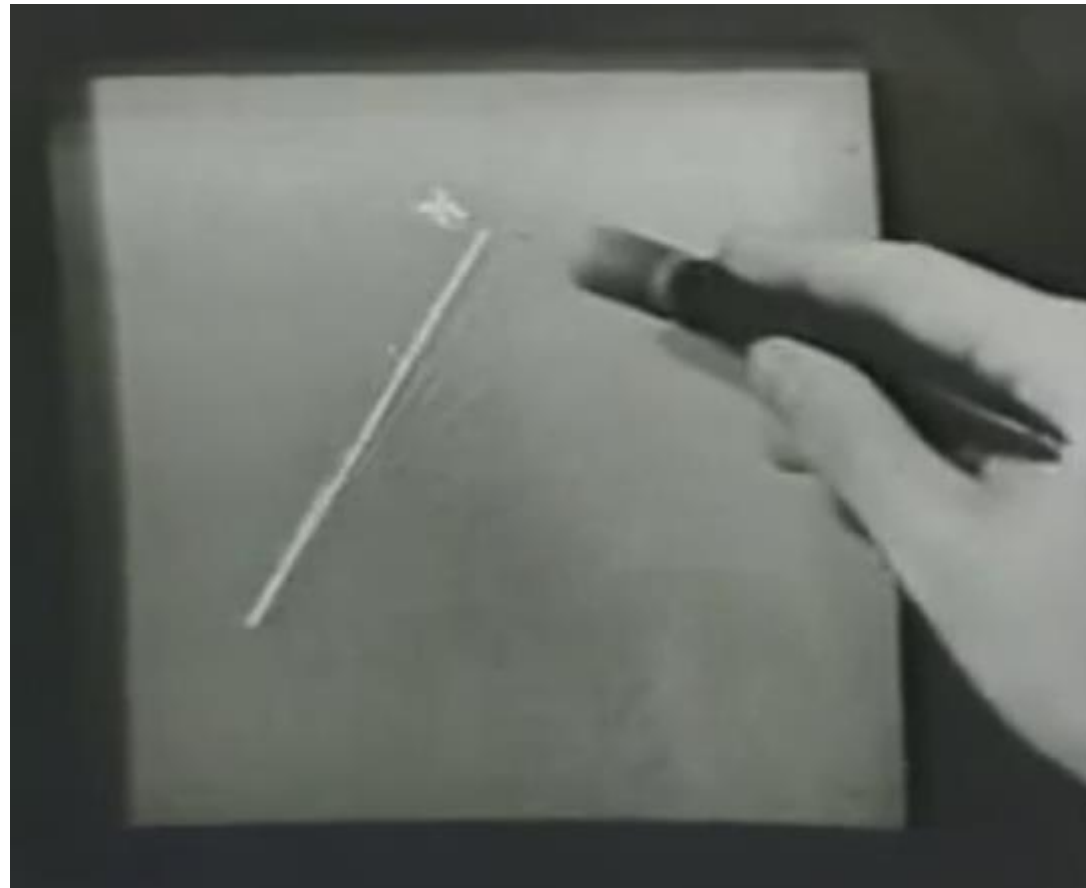
Human Computer Interaction

- Have been considering *interactive* applications
  - Real-time updates of the graphical environment
  - Prerequisite for interaction
- Human Computer Interaction (HCI)
  - Goes well beyond this
  - User interfaces

User Interfaces

- Mouse
- Keyboard
- Pens and tablets
- Graphical user interfaces
- Voice user interfaces

Sketchpad

- Ivan Sutherland, 1963
- Pioneered the way for HCI

Human Computer Interaction

- Have been considering *interactive* applications
  - Real-time updates of the graphical environment
  - Prerequisite for interaction
- Human Computer Interaction (HCI)
  - Goes well beyond this
  - Design and use of computer technology
  - Computer science, behavioural sciences, design, media, etc

User Studies

- Relevant to systems that have components that interact with users
- Bring in human participants
- Get them to use the interface
- Use their feedback to elicit requirements and guide design
- Evaluate whether solution is fit for its purpose
- Put the user, rather than the system, at the center of the process

When a UI Goes Wrong

- Example: *Three Mile Island* accident
- Poorly designed UI partially to blame

User Interfaces

- Examples?

User Interfaces

- Computer
- Mouse
- Keyboard
- Pens and tablets
- Graphical user interfaces
- Voice user interfaces
- Others:
  - The human body?

Human Body

Minority Report, Twentieth Century Fox Film Corporation
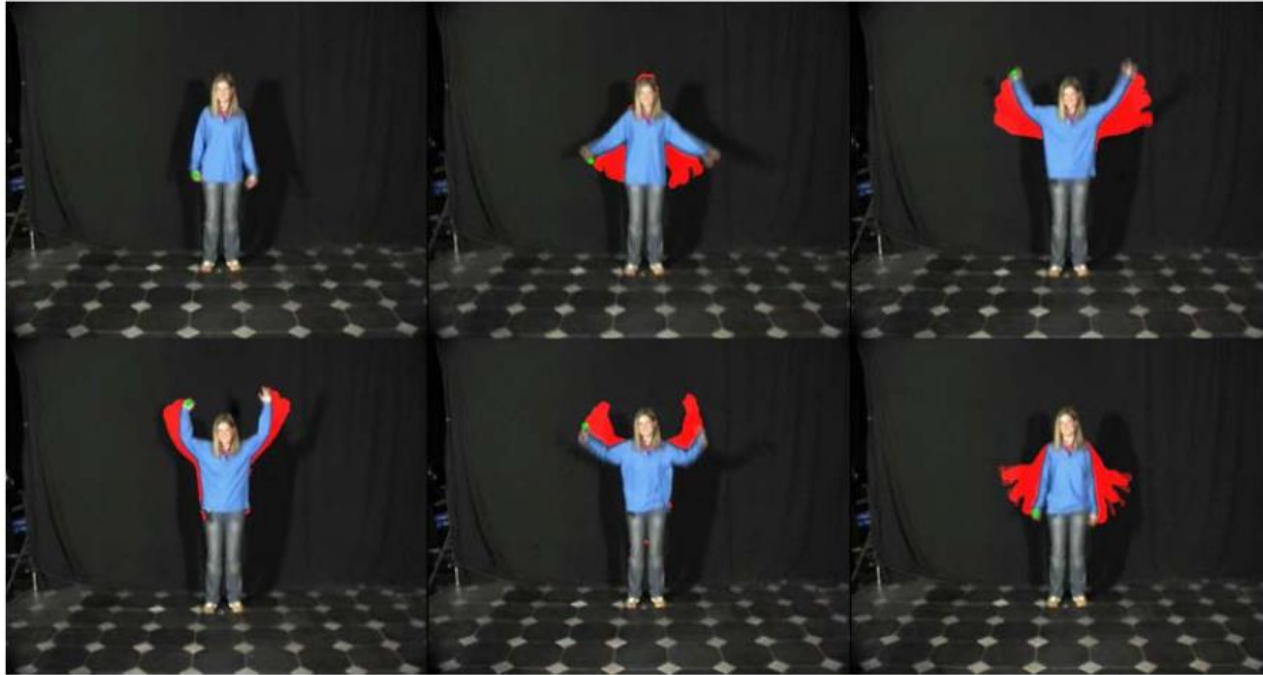
Affective computing

- Which affective states are of relevance for a specific application?
  - Design problem
- From a machine's perspective, use this information to decide whether and how to:
  - Start interaction
  - Continue interaction
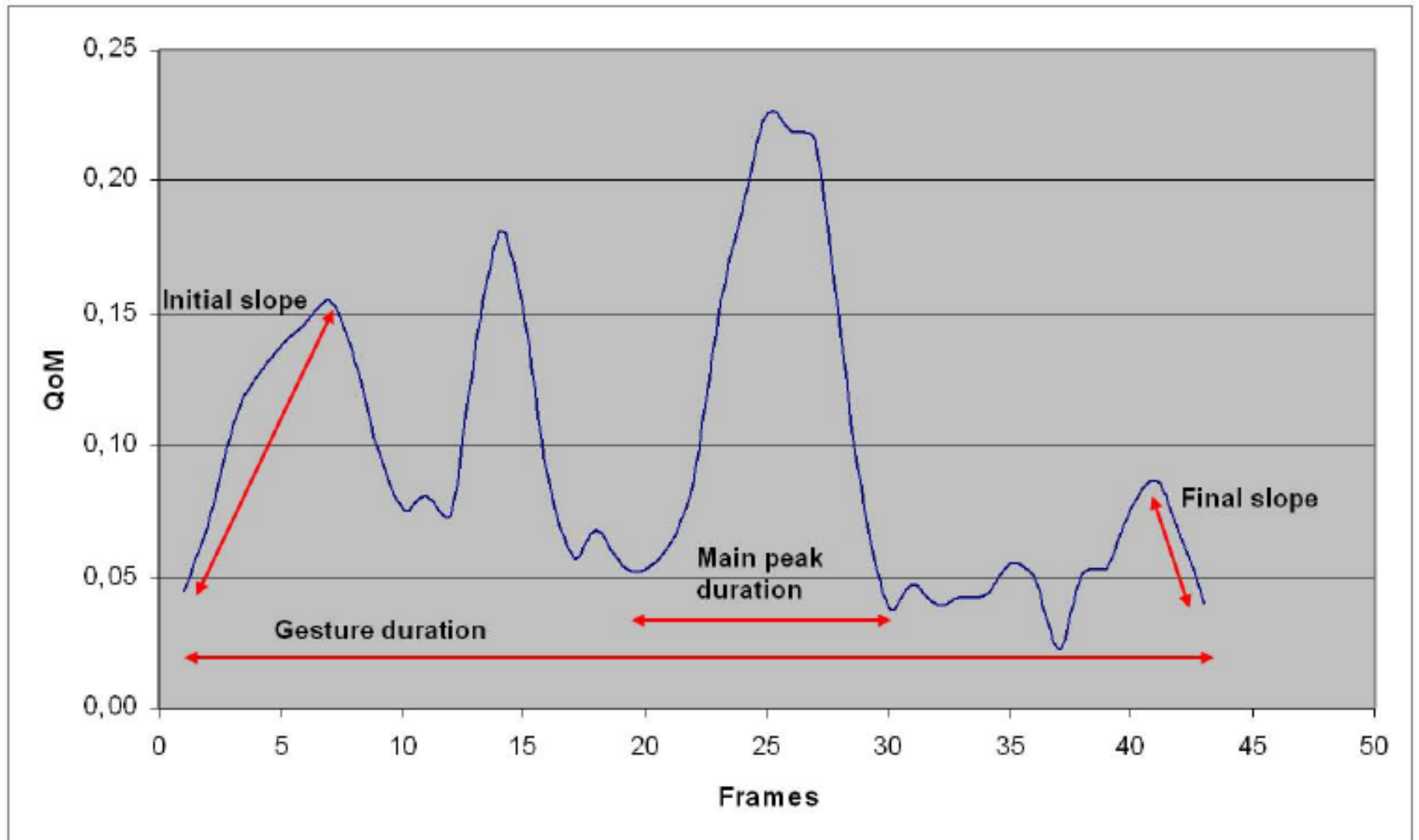 - Improve interaction

The Human Face

From Pantic & Bartlett, 2007

The Human Body

From Sanghvi et al., 2010

Expressivity Dynamics

Databases of affective expressions

- Many corpora and databases contain posed expressions
  - Currently shift to collection of naturalistic data
- Examples of publicly available databases with visual modality include:
  - Cohn-Kanade
    (Kanade et al., 2000)
  - MMI database
    (Pantic et al., 2005)
  - FABO database
    (Gunes & Piccardi, 2006)
 - Mind Reading DVD
    (Baron-Cohen et al,. 2004)

From Gunes & Piccardi, 2009

User Interfaces

- Computer
- Mouse
- Keyboard
- Pens and tablets
- Graphical user interfaces
- Voice user interfaces
- Others:
  – The human body?
  – Artificial bodies?

Social machines

- Affective and social intelligence in human-computer and human-robot interaction

- Social perception
  - Analysis of social, affective behaviour
  - Focus on
    - Computer vision-based techniques
    - Non-verbal behaviour

From http://web.media.mit.edu/~cynthiab/
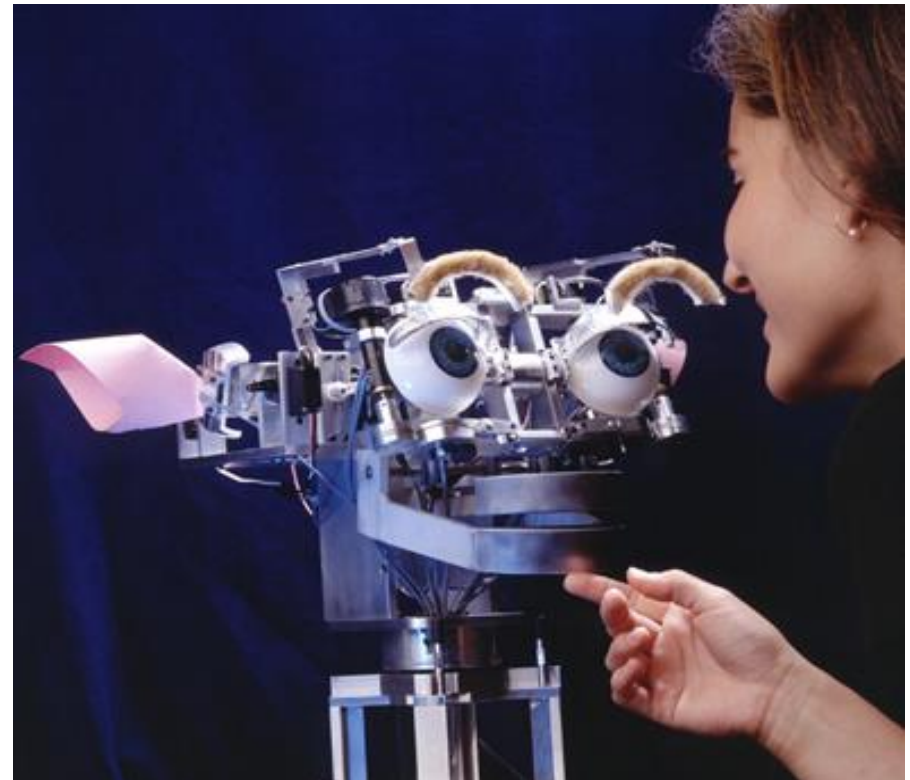
Assessment

Write a three page report using *Latex*

https://www.latex-project.org/

A topic of your choice related to HCI

Examples:

Lectures: 'Interactive virtual agents'

Choose a paper from a conference such as CHI (Computer Human Interaction)

Include references

Deadline: Monday 6th June? (TBA)