Where to Next?
Agenda

• Out in the real world
• 4\textsuperscript{th} year courses
• 4\textsuperscript{th} year projects
• Masters
• PhD
Out in the real world

• Usability Professionals Association
  – Auckland chapter  http://www.upa.org.nz/

• Chi conferences
  – CHINZ http://sigchi.org.nz/conferences/  July each year
  – OZCHI http://www.ozchi.org/  December each year
4th year course

• Semester 1
  – CS 705
  – SE 702

• Closely linked to research of people taking it.
  – 6 weeks of lectures
  – 6 weeks of seminar and project presentations (students’ work)
Seminars

• Do a literature review on a topic

• Brain computer Interaction
  – Craig Sutherland

• Gesture Interaction
  – Danny Wei
Plug in the Brain
Current Brain Computer Interfaces

Craig Sutherland
Wednesday, June 01, 2011
BCI – Fact or Fiction?

Wednesday, 1 June 2011
Where Are We Now?

Wednesday, 1 June 2011
Commercial Products

Emotiv EPOC

StarLab Enobio

NeuroSky MindSet
Limitations

- Speed/Accuracy
- Training Time
- Interaction Options
References


• Bos, D.P.-O., Poel, M., and Nijholt, A. A study in user-centered design and evaluation of mental tasks for BCI. In 17th Int. Conf. on Adv. in Multimedia Modeling. (2011), 122-134.


• Jackson, M.M. and Mappus, R., Applications for Brain-Computer Interfaces. Brain-Computer Interfaces, (2010), 89-103.


• http://www.emotiv.com/
• http://www.neurosky.com/
• http://starlab.es/products/enobio

Wednesday, 1 June 2011
Can You Handle the truth? A Review on Modern Gesture Recognition Techniques

By Danny Wei
Introduction
Problems with Hand Detection

- **Skin Models**
  - Different Skin Colors
    - Face color sampling
    - Skin models
    - Double Model Overlapping
  - Skin Colored Objects
    - Broad model and adaptive model
    - Geometric feature and skin model
Problems with Gesture Recognition

- Gesture Recognizing
  - Correct Recognition
    - Learning Based
    - Rule Based
  - Real-time Recognition
    - Lower data and computation needed
    - Estimate Values
    - Better hardware
Conclusion

- Tradeoff
- Application Dependent
Future Work

- Multi-camera recognition
  - Better accuracy
  - More speed
- Portability
  - Cell phones
  - At shops
  - Bus stops
Projects

• Something Practical – programming, design, evaluation

• Meeting with a robot
  – Safurah Abdul Jalil & Jingwen Huang

• Multi-touch drafting
  – Dong Lin & Yang Shi
REMOTE AVATARS: 
EXPLORING APPROPRIATE EMOTIONAL GESTURES FOR A NAO ROBOT IN A MEETING

by:
Safurah Abdul Jalil & Jingwen Huang
remotely controlled avatars are now extended to a physical representation rather than restricted to just virtual characters.

telepresence strives to achieve the illusion of presence at a remote location.
## MEETING GESTURES SET

<table>
<thead>
<tr>
<th>Categories</th>
<th>Intentions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-verbal Gestures</strong></td>
<td></td>
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<tr>
<td>Affective</td>
<td>- Approval / agreement</td>
</tr>
<tr>
<td></td>
<td>- Disapproval / disagreement</td>
</tr>
<tr>
<td></td>
<td>- Positive (delighted, happy, etc)</td>
</tr>
<tr>
<td></td>
<td>- Negative (impatient, frustrated, angry, disappointed, etc)</td>
</tr>
<tr>
<td>Alert</td>
<td>- Request to speak</td>
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<tr>
<td></td>
<td>- Distress signal</td>
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<tr>
<td>Greet</td>
<td>- Hello</td>
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<td></td>
<td>- Goodbye</td>
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<tr>
<td><strong>Speech Supporting Gestures</strong></td>
<td></td>
</tr>
<tr>
<td>Indicating sizes</td>
<td>- E.g. Big, large, small, little, tall.</td>
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<tr>
<td>Pronouns</td>
<td>- I/me/myself</td>
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<td></td>
<td>- You/yourself</td>
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<tr>
<td>Directions</td>
<td>- I/me/myself</td>
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<td></td>
<td>- You/yourself</td>
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<tr>
<td><strong>Physical Contact Gestures</strong></td>
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<td>Human-initiated touch</td>
<td>- Pat</td>
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<td>Robot-initiated touch</td>
<td>- Tap</td>
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<tr>
<td>Cooperative touch</td>
<td>- Hand-shake</td>
</tr>
<tr>
<td></td>
<td>- High-five</td>
</tr>
</tbody>
</table>

### Non-verbal Gestures
- Surprised
- Happy/Exhiliated
- Impatience
- Thinking

### Speech Supporting Gestures
- Disagreement (shaking head)
- Agreement (shaking head)
- They/All of you

### Physical Contact Gestures
- Human-initiated touch
  - Pat
- Cooperative Touch
  - High-five
  - Hand-shake
THE MOCK-UP MEETING

Project team (3)
• (1) Operator - operating Nao (3)
• (4) Moderator

Cameras (4)
• 3 Static cameras - (8), (9) & (10)
• 1 Free camera - (not in picture)

Participants (3)
• (5), (6), (7)

Video (YouTube)
OUR FINDINGS

- Participants do not find having gestures in a meeting useful.
- Teleoperator (Nao) still perceived as a robot rather than having an actual person operating behind it.
705 MULTI-TOUCH DRAFTING

Yang Shi & Dong Lin
Objective

- Focus
  - exploring possibilities of multi-touch sketching. i.e. using one hand to position drafting tool and other to scribe lines.

However, is this the smartest solution?
Approaches

Simply touch | Cross Hair | Virtual Ruler

- Original look
- One point locked
- Two points locked
- Line drawn
Evaulation
Adapting appearance and interaction style of real-world objects can make your program more user friendly but it is not the only solution to tablets apps.

It is also important to think about how to utilize the hardware environment.

It is possible to have a mixed solution but be aware of the problem of control overlap.
Master & PhD

• You need
  – A supervisor
  – A topic

• Sometimes you have a topic and you will be looking for someone to supervise.

• Sometimes you have a supervisor and they provide a topic.

• Usually it’s a negotiation
HCI Researchers

• Robert Amor
• Beryl Plimmer
• Robert Sheehan
• Gerald Weber
• Christof Lutteroth
• Design and build incredibly complex structures
Approaches to design interaction
Critique within a game engine
Trial of new interaction devices
LIDS; Kinect; Augmented Reality
Beryl Plimmer

- Pen and touch based interaction
- Gesture recognizers
Robert Sheehan

- Child computer interaction
- Particularly programming environments for 8 - 12 year olds (also fun for adults)
- Several prototype systems
  - Icicle
  - Fizz (Part IV projects)
Christof Lutteroth – How can (normal) users change (complex) programs?

Changing a GUI during runtime with the Auckland Interface Model (in Flash)

Grouping windows with the Stack & Tile window manager (in the Haiku open-source OS)
Gerald Weber

- UofA since 2003
- New interaction methods based on eye tracking
- New techniques for distributed collaborative and creative work.
- Also other fields: enterprise applications, theory
Exam

- Robert’s part 30%
- Beryl’s part 70% (tomorrow)