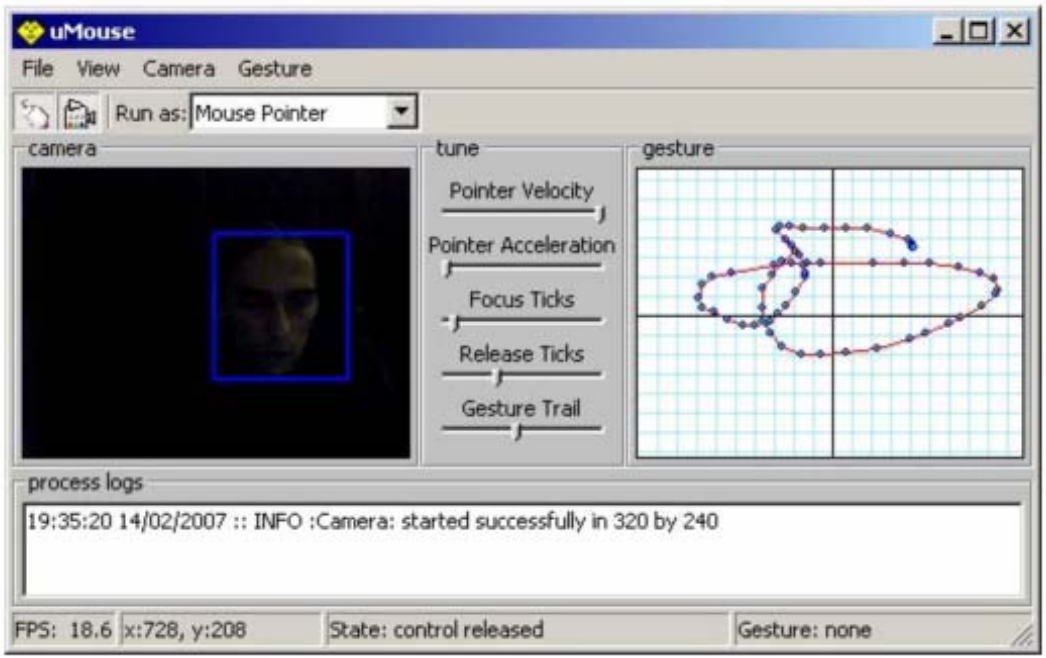
Human Computer Interaction

HCI Dimensions

Imran Siddiqi
imran.siddiqi@gmail.com

Hands/Device Free Computer Control

- Mouse control with
  - Eyes, Head, Hands or Finger
  - uMouse



Facial Expression Recognition

- Implicit customer feedback

Facial Expression Recognition

- Implicit customer feedback

Upper Face Action Units

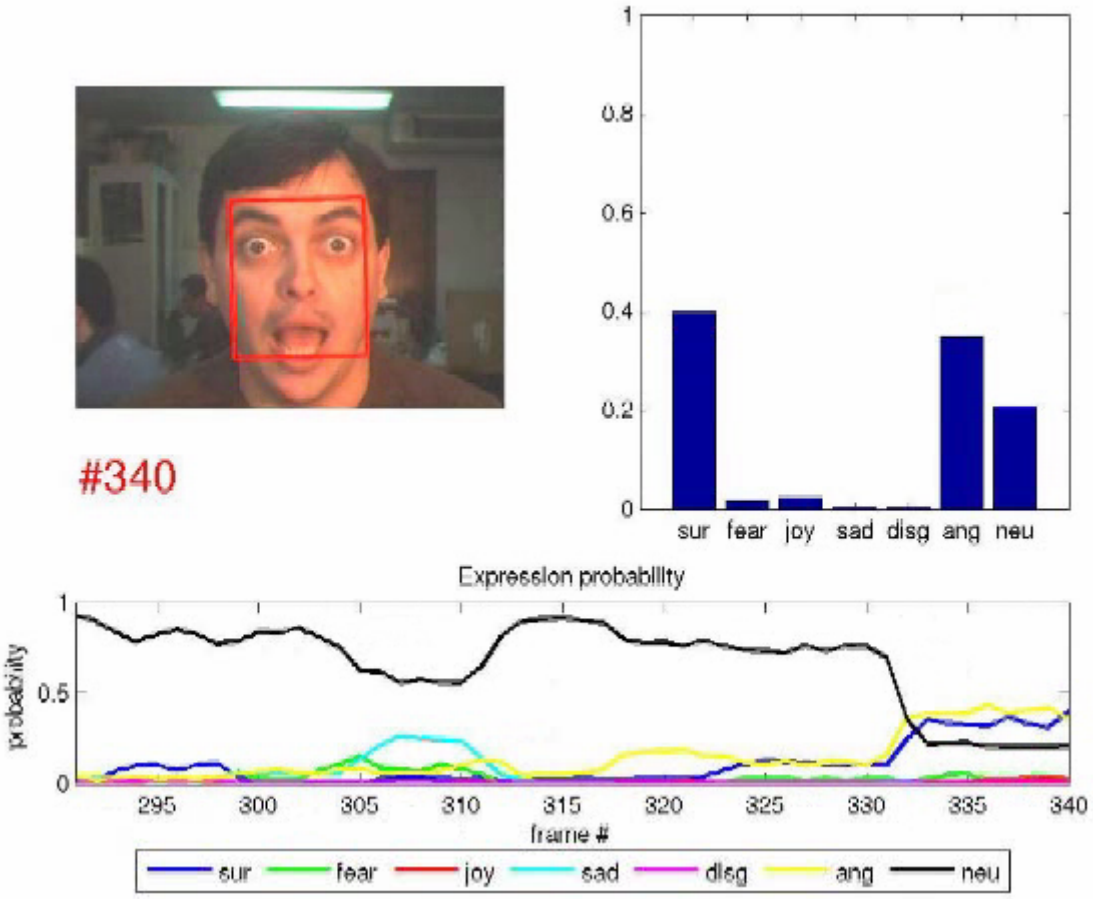
AU4	AU1+4	AU1+2
Brows lowered and drawn together	Medial portion of the brows is raised and pulled together	Inner and outer portions of the brows are raised
AU5	**AU6**	**AU7**
Upper eyelids are raised	Cheeks are raised and eye opening is narrowed	Lower eyelids are raised

Lower Face Action Units

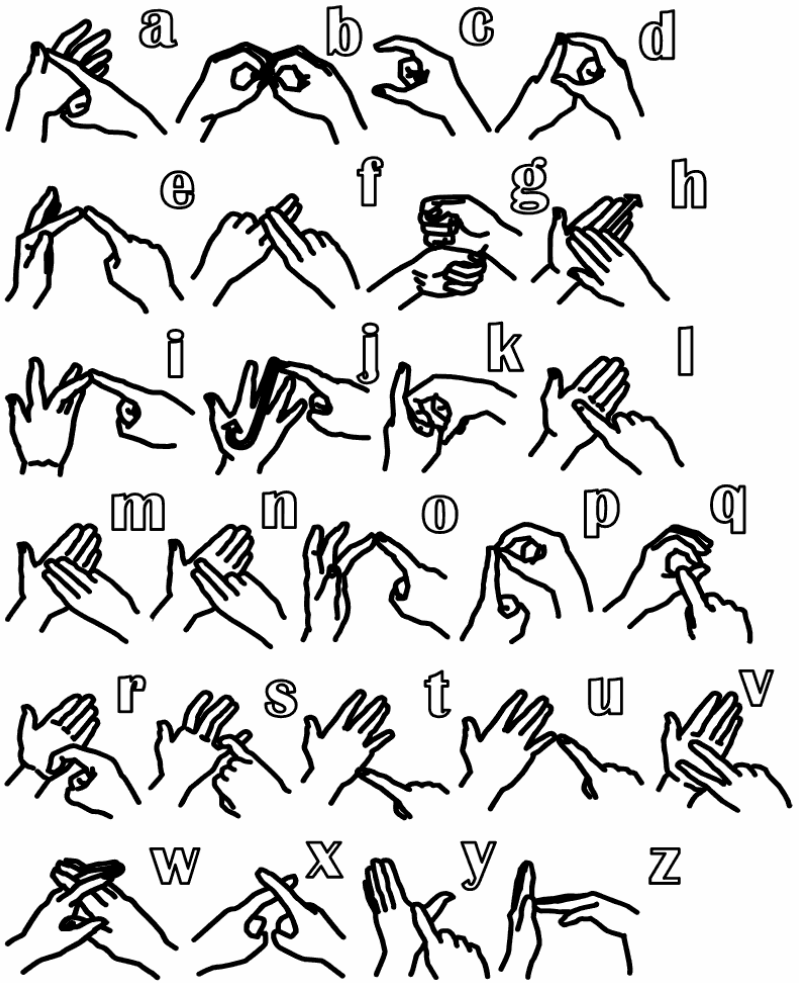
AU25	AU26	AU27
Lips are relaxed and parted	Lips are relaxed and parted; mandible is lowered	Mouth is stretched open and the mandible pulled down
AU12	**AU12+25**	**AU20+25**
Lip corners are pulled obliquely	AU12 with mouth opening	Lips are parted and pulled back laterally

Facial Expression Recognition

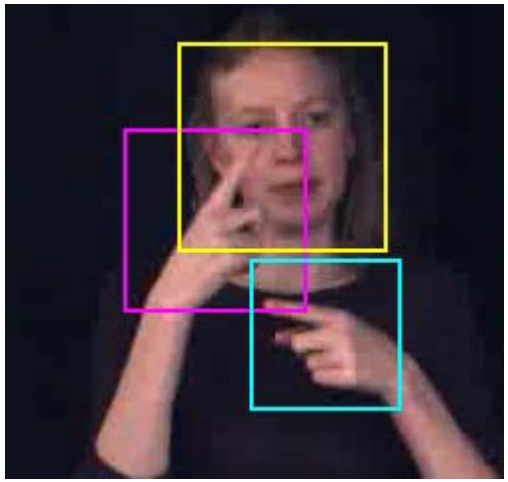
- Implicit customer feedback



Sign Language / Gesture Recognition



British Sign Language Alphabet



Lip Reading

Can you guess? ee oo sh

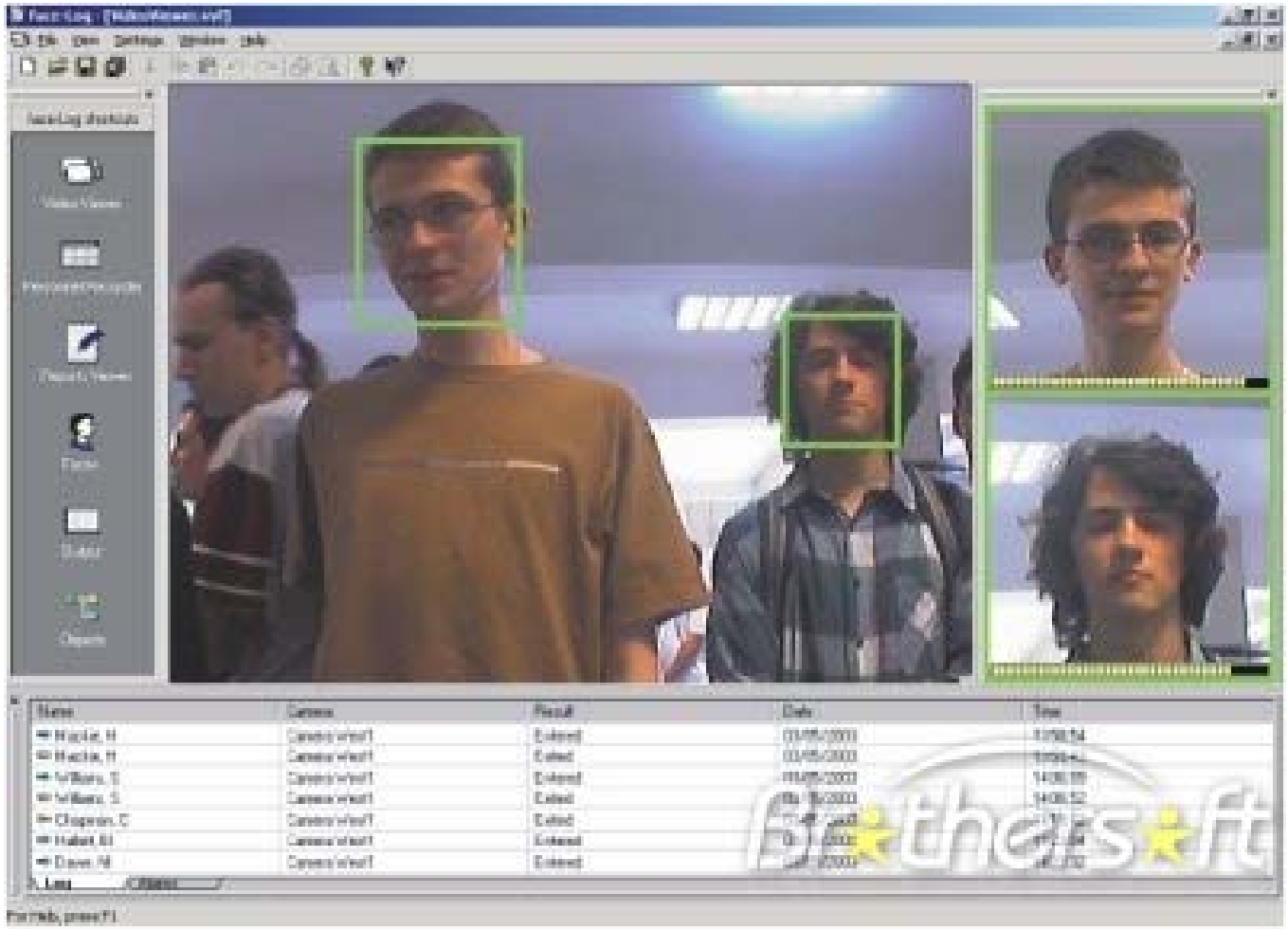
Lip Reading

Biometric Systems

- Biometrics refers to authentication techniques that rely on measurable physical characteristics that can be automatically checked
- Physiological Biometrics
  - Face, IRIS, DNA, Finger Prints
- Behavioral Biometrics
  - Typing Rhythm, Handwriting, Gait

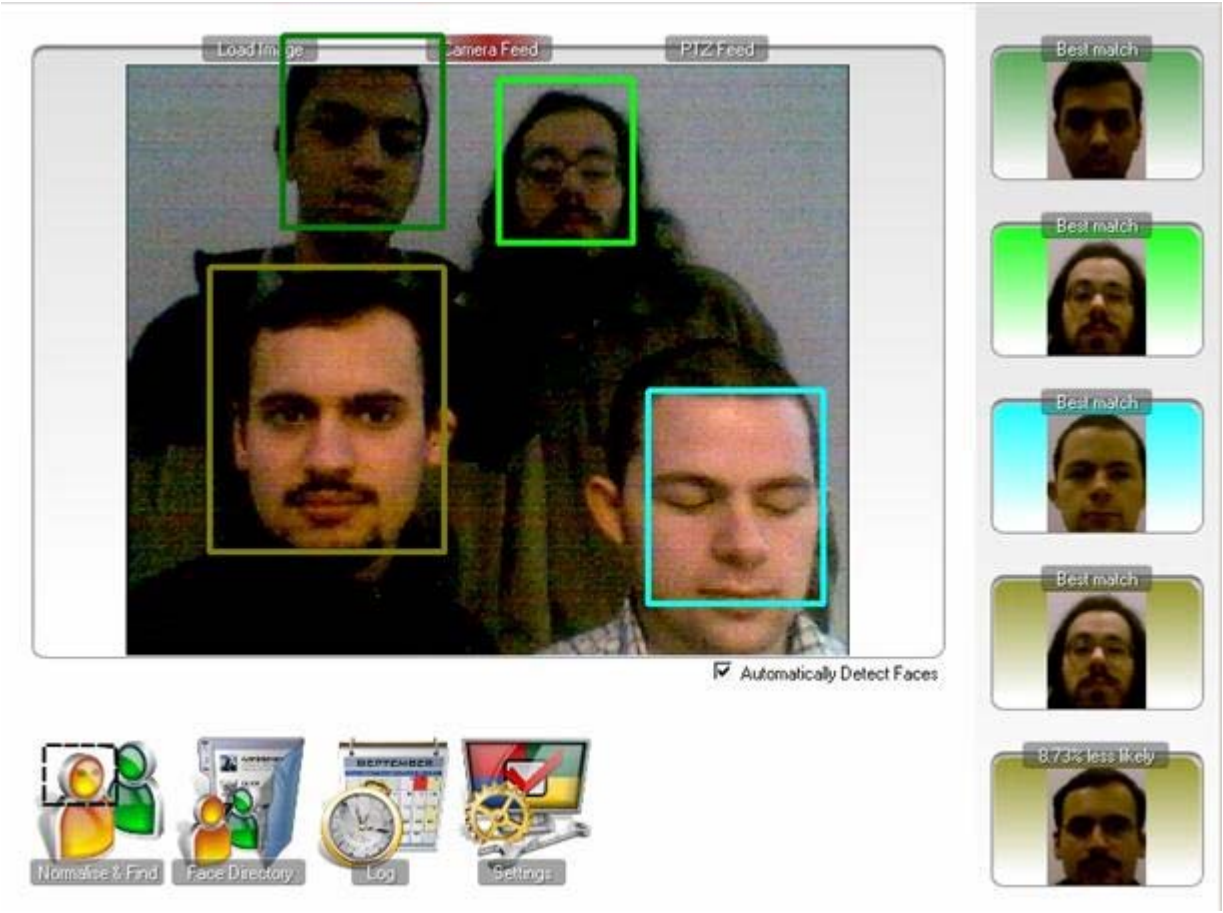
Biometric Systems

- Face Recognition



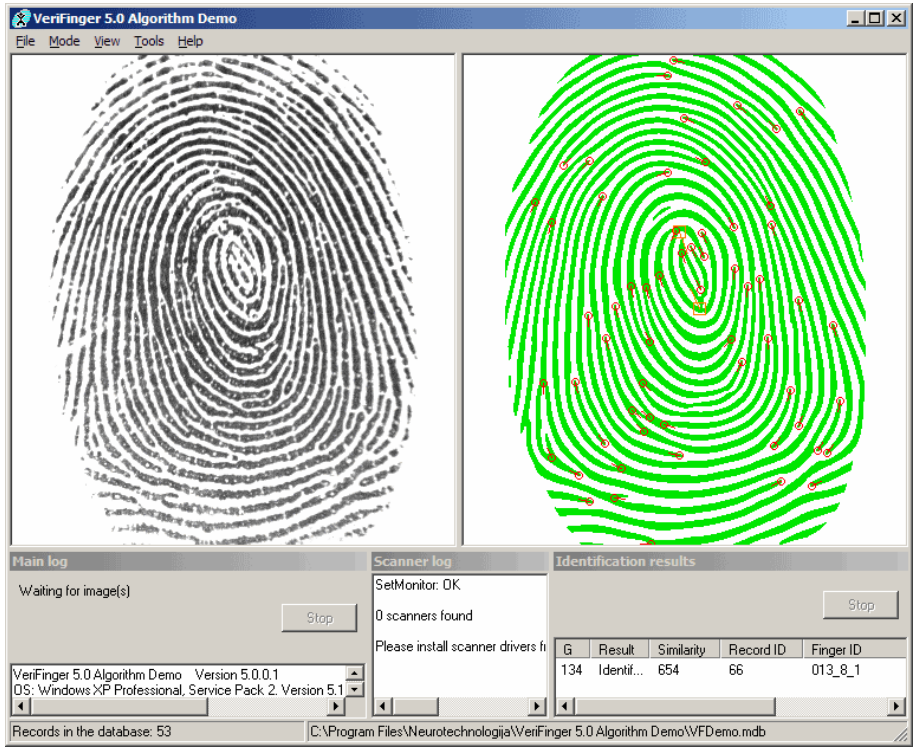
Biometric Systems

- Face Recognition



Biometric Systems

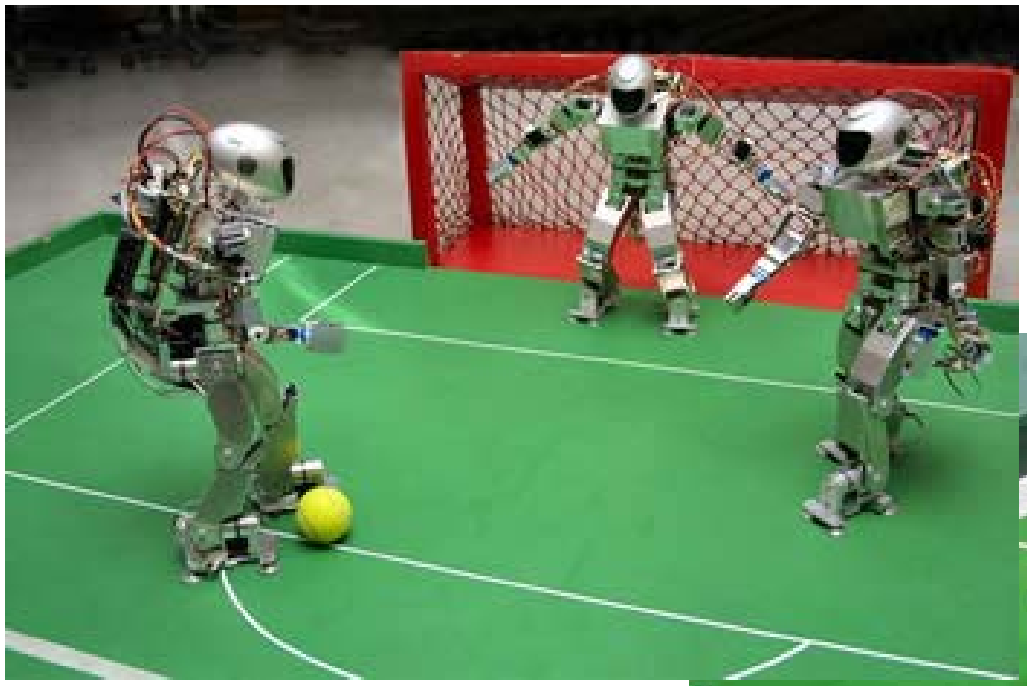
- Finger Print Recognition

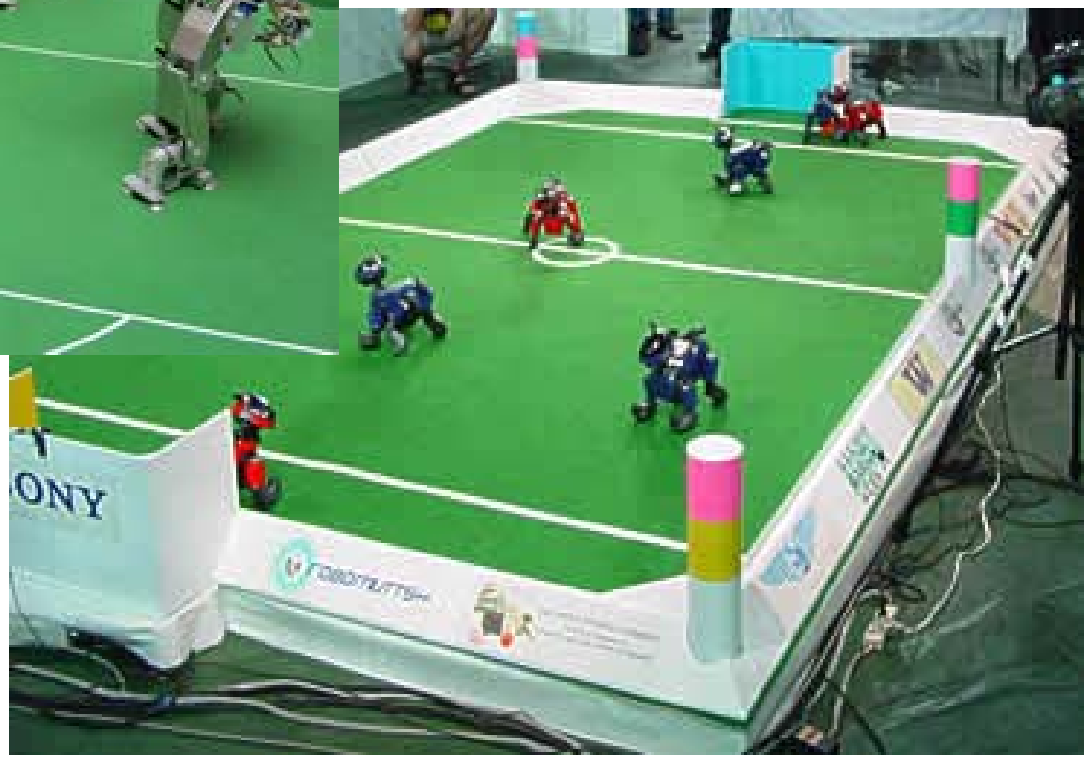


Biometric Systems

- Signature Verification

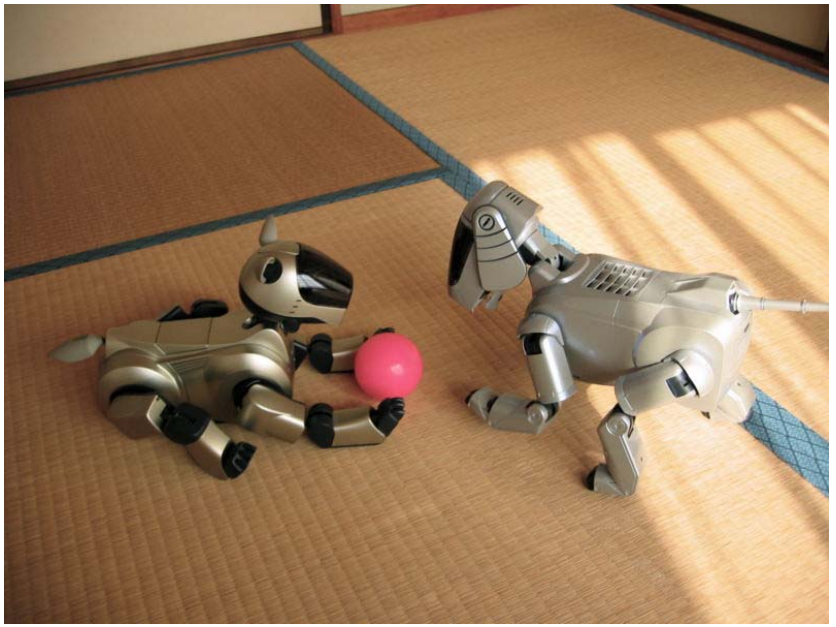
Robotics



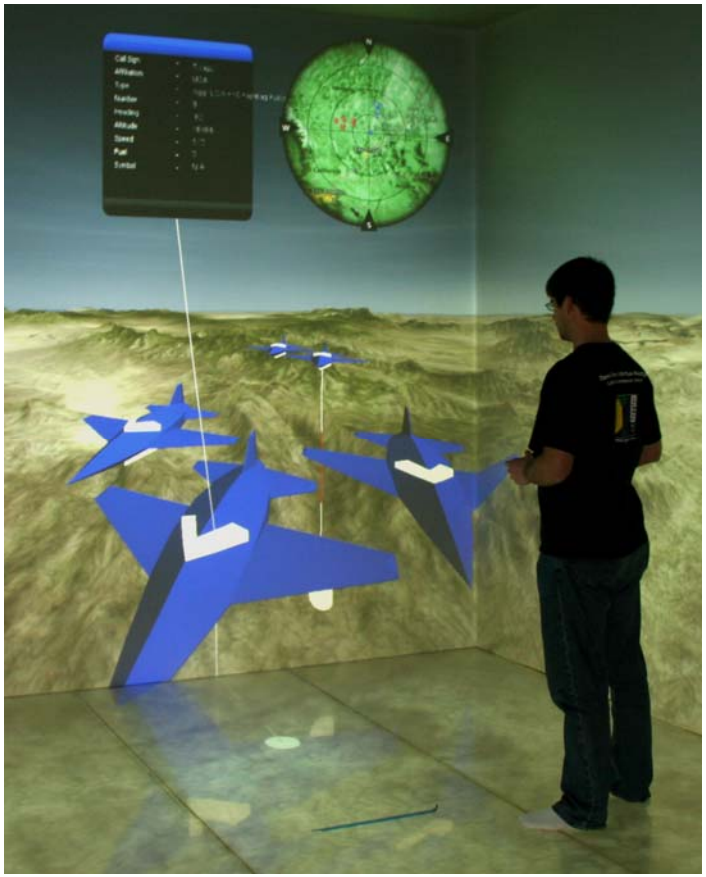


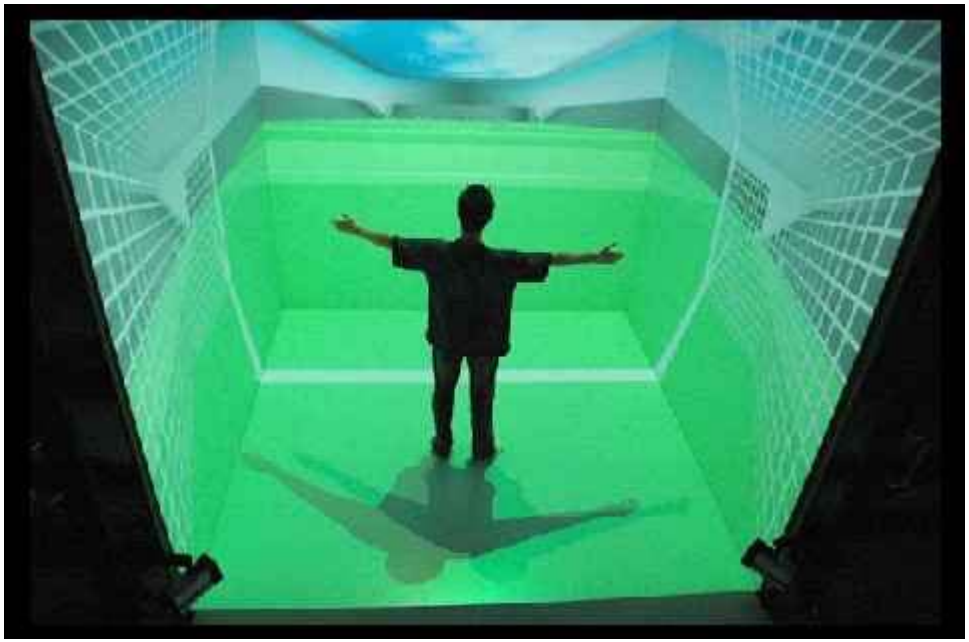
Robotics

- AIBO

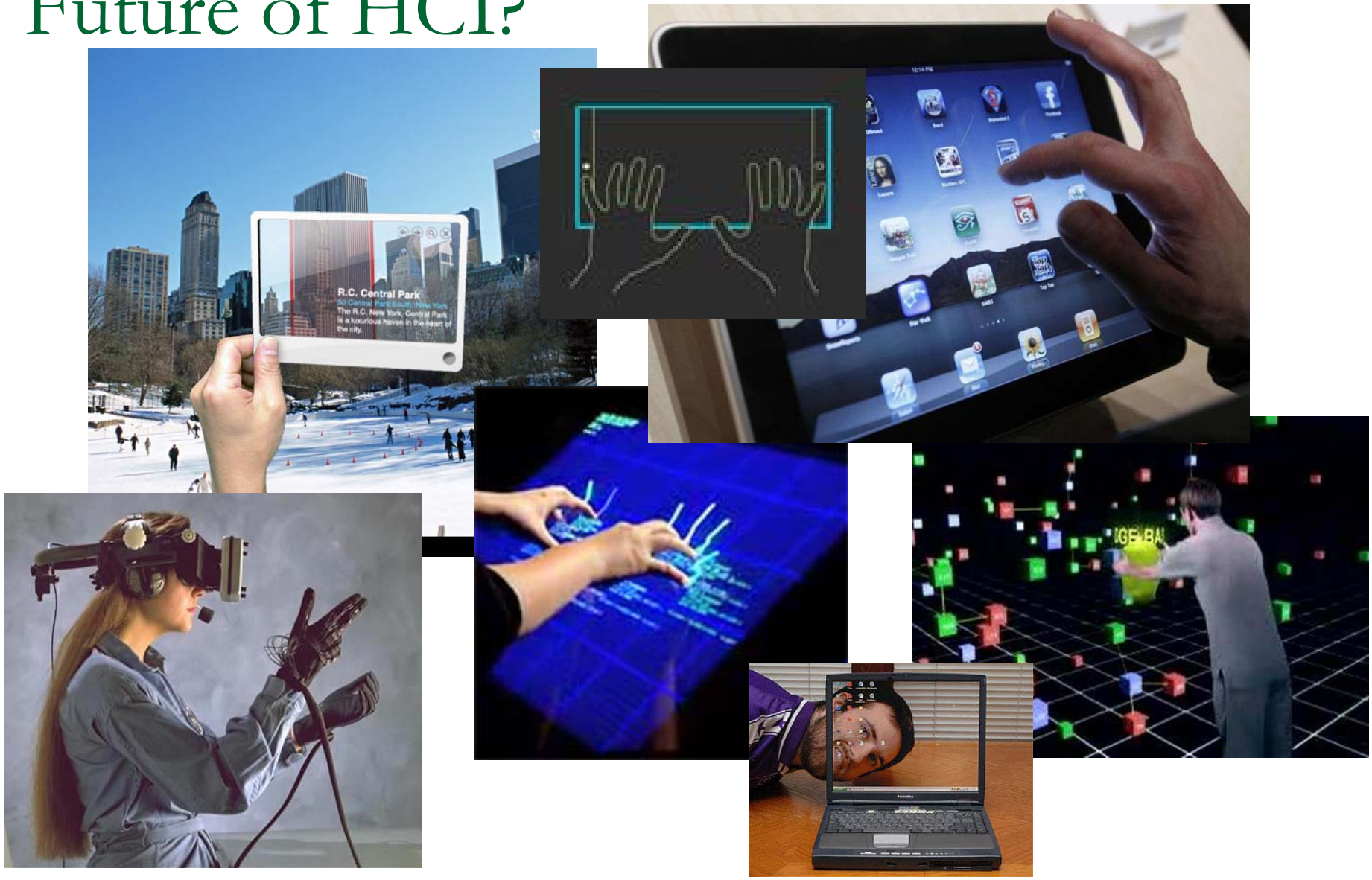


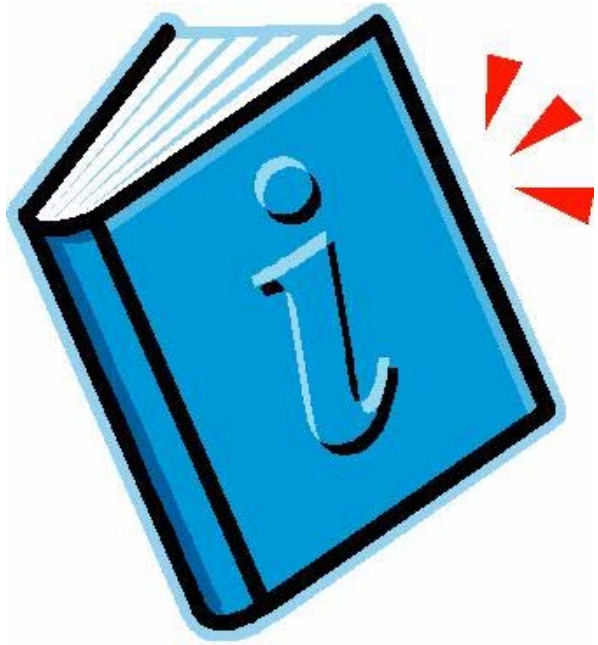
Virtual Reality





Future of HCI?



References

- Advances in Human Computer Interaction, Shane Pinder, InTech, Austria, October 2008
- *www.eu.**aibo**.com/*