Game research for training and entertainment

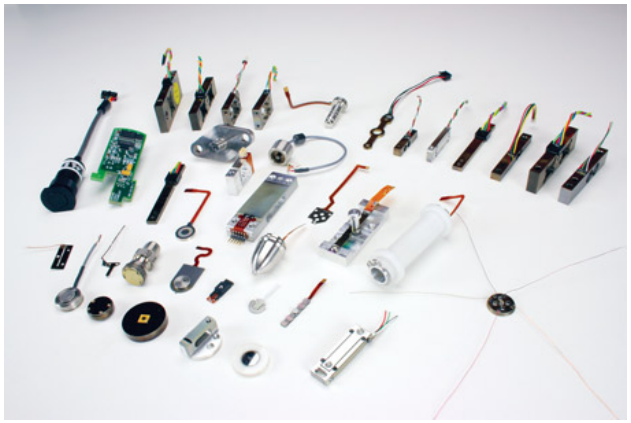
Interacting with the world

GATE Vision Workshop

30 May 2011

State of the art

- Many different types of sensors



- Realistic graphic rendering
- Fusion, e.g. Bayesian modeling
- Believe, desire, intention (BDI) modeling

Game research for training and entertainment

Impact of past 5 years

- First controller-less interaction: Kinect

- Initial brain-computer interaction: Pong

- Mobile online: Layar

- Simulating virtual characters:

Impact coming 5 years

Current research leads to the following developments in the next 5 years:

- Sensors will become available everywhere (environment, body, brain)
- Better understanding of perception, cognition, emotion, action

Challenges next 10 years

To exploit these coming developments, the next 10 years needs research on:

- Fusion and interpretation of all multisensory data together (avoid immersion syndrome phenomenon)
- Sharing information, augmented reality authoring, integrated multimodal interaction
- Multi-modal perception: sensing wind, surround audio,

Impact of solutions

Resulting opportunities:

- Augmented movement: replacement of, extension of, or distant body motion, incl. feedback
- Extended mind: augmented memory, thinking, imagination
- Virtualizing oneself, brain-controlled avatar
- Real-feel information transfer
- kD information: animated, related to current or other location and time

Impact of solutions

- Personalization: automatic adaptation, choosing own way of interaction
- Comfort:
  no “Gorilla arm/sms thumb”
- Come as you are: markerless, wireless, deviceless
- Ubiquity, mobility, wearability

Other factors

Need for vehicle projects, e.g.:

- Automatic understanding and generation of sign language
- Brain-controlled avatar
- Interaction during sleep
- Distant treatment