Visual Perception Research at TUD

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Introduction TUD

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TUD has a long history:

- It was founded in 1842 by King Willem II as the Royal Academy for the education of civilian engineers
- In 1864 the Royal Academy was changed into a Polytechnic School to educate architects and engineers in the field of civil works, shipbuilding, mechanical engineering and mining
- In 1905 the academic level of the School was acknowledged again, and it became the Delft Institute of Technology, since 1986 named as the Delft University of Technology

Introduction TUD

Some facts about the TUD:

In 2010:

- Number of students = 17.000
- Percentage of international students = 15%
- Number of MSc educations = 35
- Number of graduations (MSc and PhD) = 1900
- Scientific staff = 2600
- Divided over 8 Faculties
- Number of scientific publications = 6500

Introduction TUD

Technology, Policy & Management

Industrial Design Engineering

Mechanical, Maritime & Material Engineering

Electronic Engineering Mathematics and Computer Sciences

Aerospace Engineering

Architecture

Applied Sciences

Civil Engineering & Geosciences

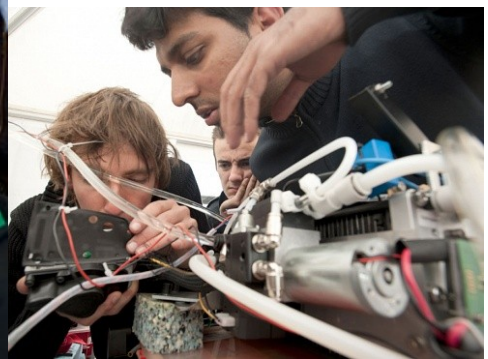
Introduction EEMCS

Faculty Electronic Engineering, Mathematics and Computer Science

Consists of 6 departments:

- Telecommunication
- Software Technology
- Microelectronics
- Electrical Power Engineering
- *Mediamatics*
- Applied Mathematics

Introduction EEMCS



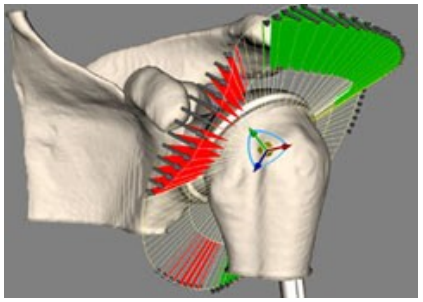
Some facts about EEMCS:

In 2010:

- 40 full professors
- 20 part-time professors
- 160 permanent scientific staff
- 400 PhD students
- 1600 MSc and BSc students

Introduction Mediamatics

Mediamatics consists of 4 groups:



- Computer Graphics

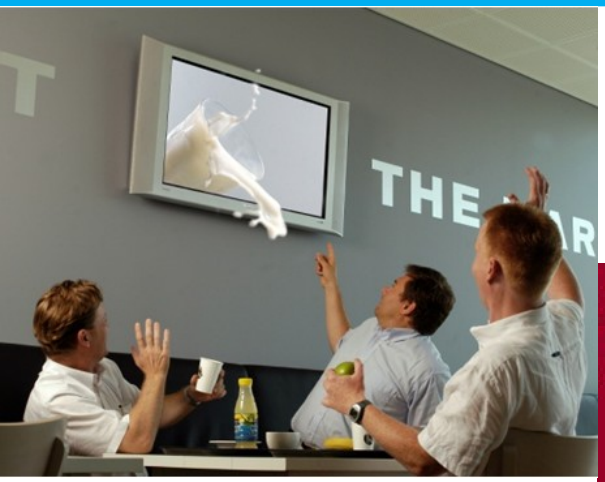
- *Man-Machine Interaction (MMI)*

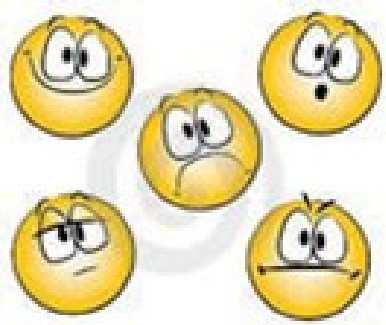
- Multimedia Signal Processing

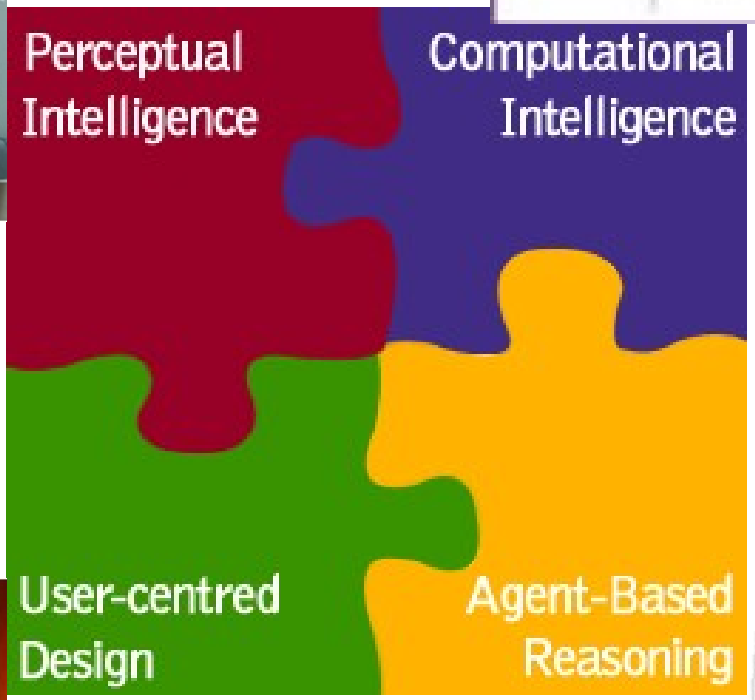
- Pattern Recognition and Bioinformatics

Introduction MMI

TU Delft







Introduction MMI

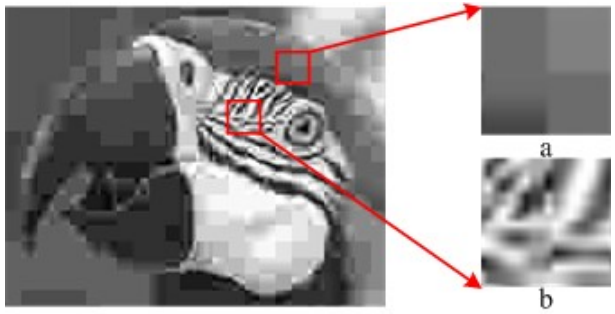
Projects within MMI

- Negotation: e.g. pocket negotiator
- Shared Mental Models: e.g., human-robot teams
- GOAL Agent Programming Language
- SocioCognitive Robotics
- Collaboration at a Distance
- Virtual Reality and Phobias: e.g.
  fear of flying, height, social phobia
- The Delft Image Quality Lab
- The Perceptual Intelligence Lab

elft Image Quality Lab

Activities at the IQ-lab:

- Objective metrics to quantify annoyance of individual artifacts
- Objective metrics based on neural networks to quantify overall perceived quality
- Effect of visual attention on perceived artifact annoyance and overall quality
- Website with databases: http://mmi.tudelft.nl/iqlab/



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Who are we

Senior managers

Ingrid Heynderickx (EWI)

Huib de Ridder (IO)

Academic Staff

Sylvia Pont (IO)

Judith Redi (EWI)

Harold Nefs (EWI)

Maarten Wijntjes (IO)

Jan Koenderink (EWI)

Ans Koenderink (IO)

Onno van Nierop (EWI)

π-lab's ambition

The π-lab focuses on:

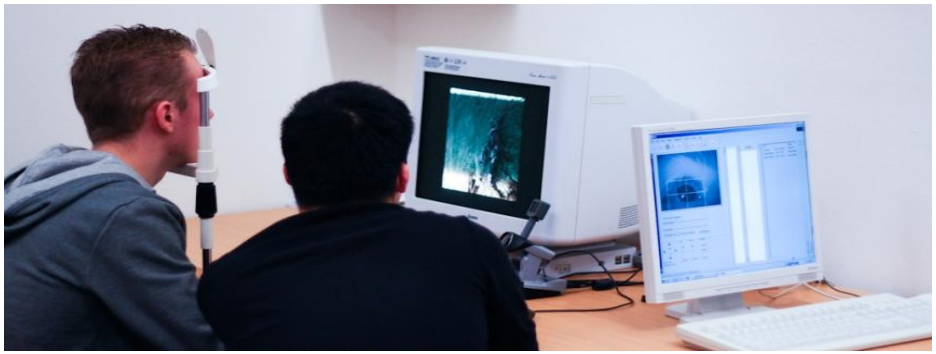
engineering perceptual interfaces to enable behavior and experience

The π-lab's aim is:

to develop a nationally unique expert center in perceptually determined user behavior and experience, and to apply the expertise to the design of user-centric applications via close collaborations with experts in adjacent research fields

Our facilities

MMI Experience Lab: room for performing experiments with subjects under well-controlled conditions



Equipment:

-Controlled lighting conditions

-Various displays, including 3D-displays and a stereoscope

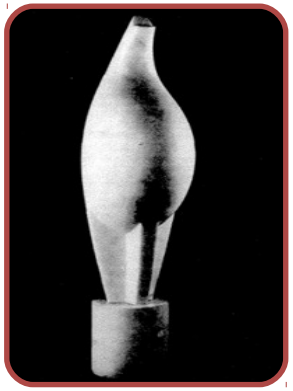
-Calibration equipment, including a goniometer, lighting dome, and plenopter

-Eye-tracking equipment (2x)

π-lab's research

Engineering quality of experience

- Optimization of visual quality of experience
- Collaboration at a distance
- Virtual and mixed reality
- Lighting for enhanced atmosphere perception



Lighting, shape and material perception

- Rendering and visualization
- Creation of atmospheres
- Lighting for object perception

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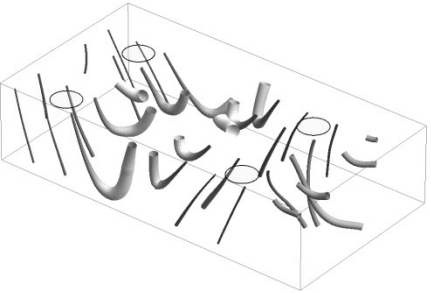
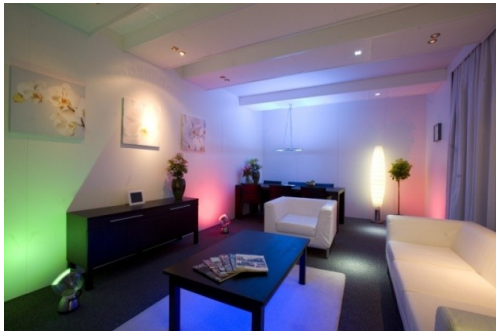
Research topics range from fundamental to applied

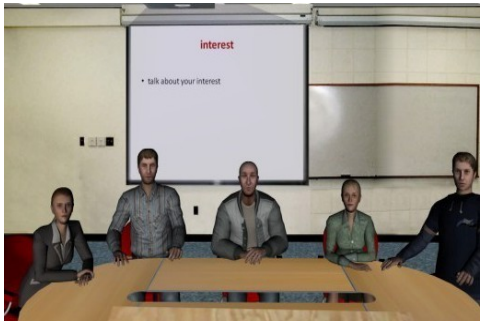


Light fields → Atmosphere reproduction

Shape perception → 3D rendering

Exocentric gaze perception → Shared virtual workspace





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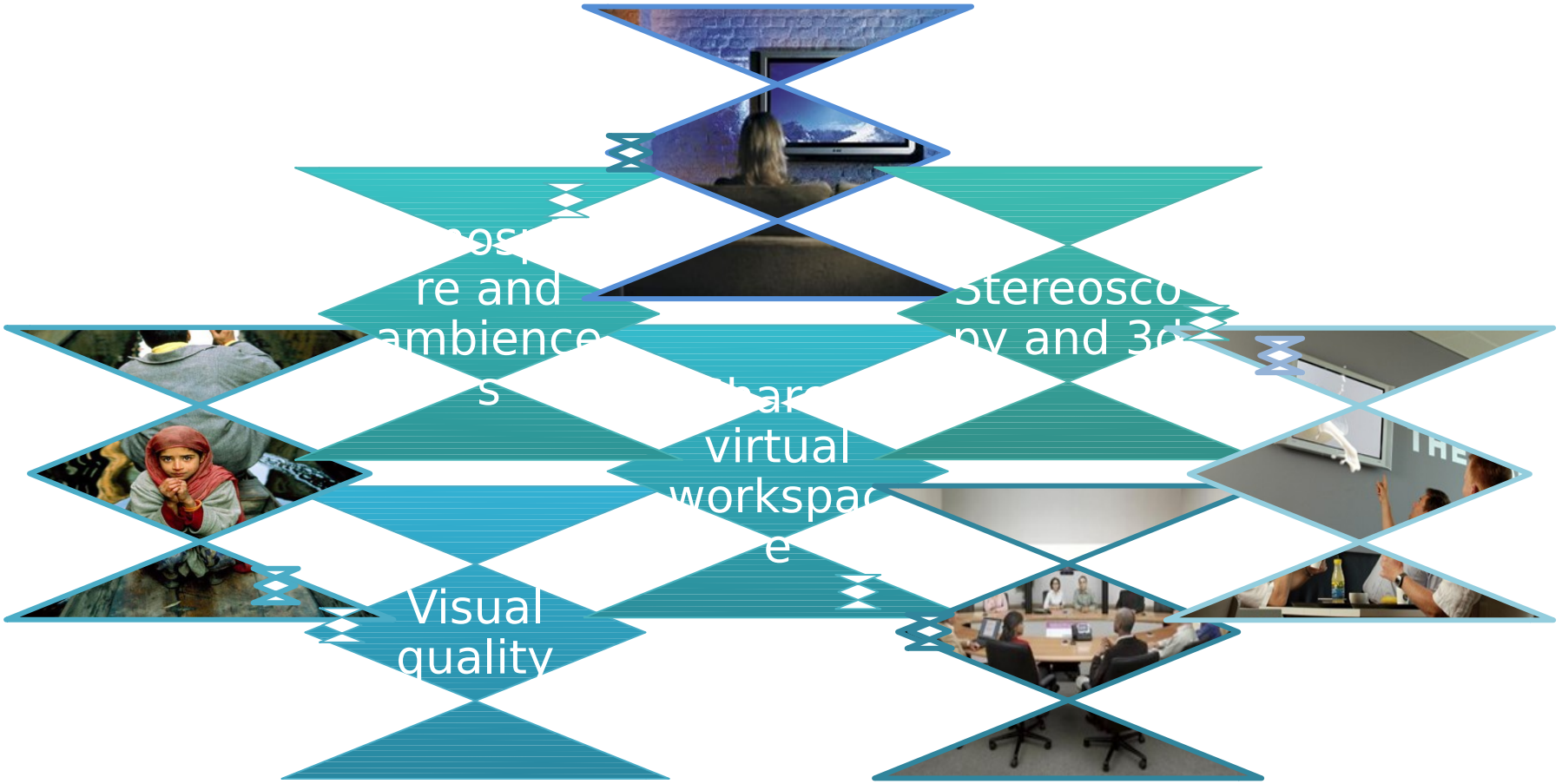
quality of experience




Thank you!
Questions?