“Making technology work for people”

Humans decide how technology is used

We use it to relax

To share ideas

To be alone for a moment

To heal
To stay fit

To rehabilitate

To share feelings with

To grow

Sometimes we wish it would disappear

Human behaviour and technology do not always match
How do humans learn or feel, how do they perceive and act, what makes them happy or angry, what do they desire, or not, how much humans influence each other, how do they think and make decisions, how habits guide our behaviour, how does this influence the way we use technology?

Topics in Human-Technology Interaction:
- trust, safety and risk perception in automation
- locus of control
- orientation and navigation
- light and sound
- attitudes and acceptance of novel technologies
- user adaptation (AI)

HTI Master
Building blocks and program

Usability, Functionality & Enjoyment

HTI main themes
Environment & Behavior
Consumer Behavior
Human Factors

Psychology
Perception, Attention, Cognition, Emotion, Motivation, Attitude, Choice

Methodology
Experimental Design, Evaluation Research, Data-Analysis, Quantitative Modeling

Technology
Built Environment, Sustainable Energy, ICT

office environments, homes, urban environment, public transport systems, road lighting

Built Environment

ICT

Sustainable Energy

Sustainable Energy technology, co2 storage, energy efficiency

Semester A: Block 1 Semester A: Block 2 Semester B: Block 1 Semester B: Block 2
Advanced Data-analysis Social Psychology Environmental Psychology Embedded and embedded computing
Consumer Behavior Advanced Perception
HTI Designtrack A HTI Designtrack B
Advanced Cognition
Domain Courses HTI Research Project

International Course (30 ECTS Domain Courses)
Graduation Project

HTI Master Program - Psychology
HTI application domains
Making technology work for people

Examples of Application Domains:

- Cognitive Robotics
- Automotive
- Smart Homes
- Persuasive Technology
- Artificial Intelligence
- Recommender Systems
- Road Lighting
- Serious Games

Research laboratories
Facilities are used heavily by students during their study.
**Cognitive Robotics**
- 37% EU population over 60 in 2050
- Assistive technology needed
- Cognitive robots require social skills

Approaching persons taking into account
Personal space
Modeling and testing robotics proxemic behaviour

**Trust in automated systems**
- Reducing congestion, improve energy efficiency and reduce accidents
- Human driver must be willing to give up control
- People trust other people who are similar to them, does this work for automated systems as well?

**Similarity cues** (e.g. sharing driving goals)
increased trust and acceptance of control systems

**Acceptance of Novel Technologies**
- biomass installations provide direct (sensory) experience
- acceptance by consumers shaped on the spot
- have ambivalent attitudes and a lack of information or direct experience

Thinking about other energy sources influences acceptance of new energy sources

**Ambient Persuasive Technology**
- Set a programmable thermostat for specific scenario’s
- 27% more savings than (interactive) factual feedback!

**Automotive human factors**
Car of the future:
- has ever more technology
- is more and more automated
- integrates more and more ICT such as internet

How should such a car be designed:
- to ensure safety?
- to ensure usability?
- to ensure user acceptance?
Automotive human factors

- uses knowledge about how humans process information
- aims to design safe and usable systems
- studies the driver-vehicle system

Example master project
- Modeling the Interaction between Driver Mental Workload and Steering Behaviour

Recommender systems

- People like to choose among many items
- But too many items can lead to choice overload

Choice Overload?

Comparing 20 versus 5 recommendations:
more attractive set | more difficulty choosing | satisfaction similar

Light, alertness and performance

- Light is important for more than just visual perception
- It influences how we feel and perform and experience our environment
- More light better?

1 hour exposure to bright light during daytime improved feelings of alertness and vitality and increased cognitive performance also during daytime

Serious games

- Digital games are motivating technology, some call it addictive!
- CVA and MS patients require long term rehabilitation training
- Rehabilitation is often very repetitive and requires much motivation

Using game derived feedback loops, challenge, stimulating graphic environment, and haptic feedback systems helps build motivating rehabilitation technology

Human-Technology Interaction requires substantial knowledge of:

- Human factors: perception, cognition, emotion, social psychology, decision making, human behaviour.
- Technical properties of systems: light, sound, software, buildings
- Research methods
HTI is rated the highest in 2011 and 2012

- Students rated HTI best on: content, teachers, skills, examinations and assessment, research and contact
- Experts rated HTI highest on all criteria, and particularly good for the program level
- NVAO awarded Human-Technology Interaction the special quality mark ‘internationalization’

Career opportunities

- HTI-specialists play an important and central role in the design of new technologies
- More and more, companies understand the necessity of focusing on the user side of technology

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My experiences
HTI from a student point of view
Ellen Kooiman

Introduction

Master Human-Technology Interaction
- First year master student
- Domain sustainable living

Background:
- Bachelor Innovation Sciences (TIW);
- Building-track
- Boardmember of study association

Why Human-Technology Interaction?

- The human aspect of technology
- Contributing to the future
- Interactive threw assignments and groupwork
- High involvement teachers
- International orientation
- Eindhoven!
My Master experiences

- First year
  - Intense
  - Interesting courses
  - Enthusiasm students and professors
  - Mentor
  - Connection with companies
  - Chance to evolve yourself
    - Performing your own research
    - Critical thinking
    - Discussing
    - Choosing your own path (courses, research, international semester)

TU/e and IS facilities

- Good facilities
  - Library
  - Sports
  - Seminars
  - Gaslab/Zwarte Doos
  - Career centre

- Study association ‘Intermate’
  - Many and interesting/fun activities
  - Every Thursday afternoon there is an option to drink a beer with your fellow students.
  - Study trip

Impression of the student life

Thank you for your attention!