LECTURE SERIES ON:

EVIDENCE BASED DESIGN
SPACE | PERCEPTION | EMBODIMENT

ECTS 6

Weekly: Lecture (Tuesdays) — Tutored Lab & Group Work (Wednesdays)
Tue: 16:00 – 18:00 — Wed: 12:00 – 14:00

Location:

DesignSpace Lab | Cartesium 3.01 (Enrique-Schmidt Str. 5)

STUDY PROFILE — KIKR, DMI

Artificial Intelligence, Cognition, and Robotics
(KIKR – Küstliche Intelligenz, Kognition und Robotik)

Digital Media and Interaction
(DMI – Digitale Medien und Informatik)

TUTORS

Dipl. Inf. Jakob Suchan (PhD candidate)
Vasiliki Kondyli (designer | architect)

LECTURER

Prof. Dr. Mehul Bhatt
University of Bremen, Germany

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ABOUT THE COURSE

This course addresses the cognitive foundations for the design and development of human-centred assistive technologies and novel computer-human interaction paradigms in areas including, but not limited to:

- interpretation and synthesis of visual and visuo-auditory narrative forms (e.g., moving image)

- architectural design cognition (e.g., assistive technology for computer-aided people-centred design of the built environment)

- media design, immersive and virtual reality

Special emphasis is devoted to evidence-based empirical methods in visuo-auditory and visuo-locomotive perception (e.g., with eye-tracking) aimed at studying the (embodied) reception and interpretation of dynamic visuo-spatial imagery and sensorimotor interactions in humans, and their implications in designing cognitive assistive technologies concerned with the synthesis of user experience in everyday, professional, and creative performance. This course will specifically address:

- scene and event perception

- commonsense scene perception

- moving image (film, animation)

- cognitive film theory

- cognitive film studies

- embodiment, image schema, cognitive linguistics

- evidence based studies in visual perception and the moving image

- automated (computational) cinematography

- architectural design cognition

- evidence based post-occupancy analysis of user behaviour in large-scale public buildings (e.g., hospitals, airports)

COURSE FORMAT
This lecture series will involve:

- Lectures and group work involving readings, reporting, and discussions of literature on topics related to the course:

- Tutorials will involve learning tools, group work; and investigation of case-studies coming form two distinct large scale evidence based design experiments: (1) an experiment on visuo-locomotive user experience (as part of indoor wayfinding tasks) at the New Parkland Hospital in Dallas (Texas, USA)[1]; (2) eye-tracking experiments with select films aimed at cognitive film studies.

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[1] Bremen-Dallas Parkland Project – www.design-space.org/edra45

- Occasional readings will be assigned, followed up with discussion on assigned material

- Students of computer science, or those interested and experienced in computer programming, will have the opportunity to engage choose assignments involving high-level cognitive vision, logic programming for qualitative reasoning about the moving image etc. Appropriate tasks will be designed for students with background in art / design / digital media

- Throughout the course, students will build a presentation on select topics in small sub-groups. Final presentations on an area of specialisation selected by students in consultation with the advisors; presentations can be individual, or be developed as a sub-group. A short report will be written as a summary.

BASIC FACTS

- **Bachelor or Master Status?**
  Both bachelor and masters students are welcome to participate.

- **Who can join?**
  All interested students are welcome to participate (e.g., Informatik, Media Informatik and Digital Media, Wirtschaftsinformatik). **Interest in one or more of the following will be valuable**: computational cognitive systems, artificial intelligence, knowledge representation, human-computer interaction, computer-aided design, computer vision, geography, robotics, digital media.

- **Are there some formal prerequisites?**
  No; the course is self-contained.

  However, the course can synergize with certain other courses. If you already have or plan to undertake any of the courses listed below, then there will be a possibility to build on previously acquired knowledge, practical skills, and possibly even programming projects:

  - Spatial Reasoning for Computational Cognitive Systems (SoSe 2015, WiSe 2015-2016, or SoSe 2016).
    http://www.mehulbhatt.org/learning/

  - Visuo-Auditory Narrativity and the Moving Image (WiSe 2015-2016).
    http://www.mehulbhatt.org/learning/wise15-16/

  - Student "Project AUGMENT" (WiSe 2014-2015 and SoSe 2015).
    http://www.mehulbhatt.org/learning/sose2015

  - Computergraphik / Computer Graphics (03-BB-708.01).   Prof. Dr. Gabriel Zachmann

  - Bildverarbeitung (03-BB-709.01).   PD Dr. Björn Gottfried, and Prof. Dr. Michael Beetz

RELATED COURSES

There will be a value in undertaking the course in parallel with some relevant courses or ongoing thesis work. We are happy to advice in this regard based on personal interaction on a case-by-case basis. Please consult the lecturers.

COURSE PRESENTERS

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