BLOCK COURSE ON:

SPATIAL REASONING FOR COMPUTATIONAL COGNITIVE SYSTEMS

ECTS 6

Mon August 1 2016 — Fri Aug 5 2016
10:00 - 13:00 –and– 14:00 - 18:30

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)

LECTURER

Prof. Dr. Mehul Bhatt
University of Bremen, Germany

TUTOR
Dipl. Inf. Jakob Suchan

SPATIAL REASONING FOR COMPUTATIONAL COGNITIVE SYSTEMS

ABOUT THE COURSE

This course will introduce students to declarative problem solving skills with logic programming. After a basic introduction to the declarative logic programming language Prolog, this course presents an application-driven in-depth overview of methods for commonsense spatial representation and reasoning within artificial intelligence based computer programs, computational cognitive systems, intelligent agents (e.g., in computer games). Methods that can be used to model and implement commonsense spatial reasoning components within (hybrid) intelligent systems will be introduced in detail with state-of-the-art deployed examples from ongoing research projects in the fields of architecture design, cognitive vision, robotics, geographic information systems, computer games, spatial puzzles, smart homes.

COURSE FORMAT

This block course will involve two phases:

- Phase 1:
  - One week of lectures and practical labs during Mon August 1 2016 — Fri Aug 5 2016
- Phase 2:
  - One programming project to be developed & completed individually, or in a group; project will be done after completion of lecture+labs
  - The topic of the programming project has to be developed in consultation with the lecturers
  - There will be a final presentation of the programming project developed

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**: programming, artificial intelligence, knowledge representation, human-computer interaction, computer-aided design, computer vision, geography, robotics, computer games.
- **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:

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

- Cognitive Computing (SoSe 2015, and SoSe SoSe 2016).
  http://www.mehulbhatt.org/learning/sose2015
  http://www.mehulbhatt.org/learning/sose2016

- 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

- KI - Wissensakquisition und Wissensrepräsentation (03-MB-710.02). 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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