

COGNITIVE COMPUTING FOR ASSISTIVE TECHNOLOGIES

The Case of Commonsense, Space, and Change

Mehul Bhatt

Cognitive Systems (CoSy)

University of Bremen, DE

Humans can safely cross a road with moving cars around, and strategically navigate on busy streets. We can easily distinguish between someone suddenly falling down, and someone trying to comfortably sit down. In our socio-professional interactions, we can typically learn to interpret natural gestures and cues of other individuals, and accordingly organize our own behaviour. In essence, human cognitive capability excels and outperforms computers especially at everyday tasks involving commonsense perception and reasoning about Space, Actions, Events, Change, and Interaction.

Human-Centred Cognitive Computing (HC³) aims to systematically develop theories, formal specifications, and computational models that capture human-like cognitive capabilities concerning commonsense reasoning about space, actions, change, and interaction in everyday situations. Human-centred'ness, with its emphasis on knowledge about people and their context, will be at the heart of next-generation collaborative cognitive systems and assistive technologies that empower humans in creative and productive tasks, knowledge discovery and perceptual data analyses, high-level control of autonomous systems etc.

This talk will focus on 'spatial cognition and computation' as a core component of HC³. It will introduce basic concepts of HC³ with an emphasis on introducing fundamental topics and research questions in spatial representation and reasoning, commonsense reasoning, formal semantics & conceptual inference, and reasoning about action and change in the backdrop of emerging HC³ initiatives. A major focus will be on demonstrating the manner in which 'spatial' conceptualisation, formalisation, and computation occurs within a range of Spatial Assistance Systems. In particular, assistive technologies in architecture and urban design, human activity recognition & behaviour interpretation in smart environments, dynamic GIS, and cognitive robotics will be demonstrated. The emphasis will be on the direct impact of the theory and practice of HC³ on everyday life.

ABOUT THE SPEAKER

Mehul Bhatt

Cognitive Systems (CoSy), and
Spatial Cognition Research Center (SFB/TR 8)

University of Bremen, FB3 – Informatics

P.O. Box 330 440, Bremen 28334, Germany

T +49 (421) 218 64 237

F +49 (421) 218 98 64 237

bhatt@informatik.uni-bremen.de

<http://tinyurl.com/mehul-bhatt>