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Spatial Cognition XI

11th International Conference, Spatial Cognition 2018
Tübingen, Germany, September 5–8, 2018
Proceedings

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Preface

Welcome to the proceedings of the International Conference on Spatial Cognition 2018 which was held during September 5–8, 2018, in Tübingen, Germany. Spatial Cognition took place in Germany for the eighth time, after being held in the USA in 2016, and it was hosted by the University of Tübingen and the Max Planck Institute for Biological Cybernetics.

The University of Tübingen, founded in 1477, has been an institute of excellence in research and teaching for over 500 years. The university has over 25,000 students and supports numerous collaborative research centers and DFG-funded research training programs. The MPI for Biological Cybernetics is internationally known for the Department of Human Perception, Cognition, and Action directed by Professor Heinrich Bülthoff, which combines traditional psychophysics methods with computer simulations and realistic virtual environments to address innovative questions relating to spatial cognition.

Over 30 years, the Spatial Cognition conference series has brought together researchers from different scientific fields insofar as they are concerned with cognitive agents and space, such as cognitive psychology, linguistics, computer science, geography, philosophy, or education. The conference is concerned with the acquisition, organization, and utilization of knowledge about spatial objects and environments, be it real, virtual, or abstract, human or machine. Research issues in the field range from the investigation of human spatial cognition to mobile robot navigation, including aspects such as wayfinding, spatial planning, spatial learning, internal and external representations of space, and communication of spatial information. SC 2018 gathered together researchers working on spatial cognition from all of these perspectives.

The conference brings together researchers and practitioners from a variety of backgrounds and interest areas. The intimate size of this single-track conference provides an ideal venue for leading researchers, practitioners, and students to share research results and experiences. As always, our main goal has been to provide an engaging and high-quality program. We retained the successful format of previous years: a three-day conference event preceded by one day of workshops, tutorials, and a doctoral symposium. This year we were delighted to receive 44 paper submissions of which we accepted 22 papers (resulting in overall acceptance rate of 50%) and 76 posters! Submissions were assessed in early 2018 by an international and diverse Program Committee (PC) and finally at a remote meeting of the PC chairs. The topics of this year's papers and posters reflect the diversity of ideas and perspectives that comprise the spatial cognition community, ranging from the study of agents to navigation to language. What brings this all together is a commitment to innovation that expands our understanding of how humans perceive and interact in space. We were especially pleased to have three exciting keynote speakers this year. Prof. Nira Liberman is a professor of social psychology at Tel Aviv University (from 2001). She studies psychological distance, including temporal distance, spatial distance, social

distance, and probability. Her research encompasses questions of how distances affect mental representation, decision-making, and motivation, how distances affect intellectual performance, generalization in learning, as well as how distances are interrelated. William H. Warren is a professor of cognitive, linguistic, and psychological science at Brown University and Director of the Virtual Environment Navigation Lab (VENLab). He uses virtual reality techniques to investigate the visual control of human action, including locomotion, path integration, spatial navigation, crowd behavior, and the dynamics of perceptual-motor coordination. Warren is the author of over 110 research articles and chapters and the recipient of a Fulbright Research Fellowship, an NIH Research Career Development Award, and Brown's Teaching Award for Excellence in the Life Sciences. Prof. Luc Van Gool is a professor of computer vision at ETH Zurich (1998) and KU Leuven (1991). His main interests include 3D capture, object recognition, motion and action analysis, as well as their combination. He has co-authored more than 250 publications on these topics. In 2016 he was awarded the Jan Koenderink Award for the lasting influence of his work on SURF features, and in 2017 he was given a Distinguished Researcher Award by the IEEE Computer Society.

As ever, a large number of people have contributed to the organization, reviewing, venue arrangement, Web and media presence, and publicity for Spatial Cognition 2018, and we would like to express our deepest gratitude to the many dozens of volunteers whose efforts have contributed to what we hope will be a memorable event. We would in particular like to thank our local chairs and our corporate sponsors for their continued support for this conference series.

June 2018

Sarah Creem-Regehr
Johannes Schöning
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