CoSLI 2010
Computational Models of Spatial Language Interpretation
– Preface –

Robert Ross[1], Joana Hois[2], and John Kelleher[1]

[1] Artificial Intelligence Group
Dublin Institute of Technology, Ireland
robert.ross@dit.ie,johnd.kelleher@dit.ie
[2] Research Center on Spatial Cognition (SFB/TR 8)
University of Bremen, Germany
joana@informatik.uni-bremen.de

Computational Models of Spatial Language Interpretation

Competence in spatial language modelling is a cardinal issue in disciplines including Cognitive Psychology, Computational Linguistics, and Computer Science. Within Cognitive Psychology, the relation of spatial language to models of spatial representation and reasoning is considered essential to the development of more complete models of psycholinguistic and cognitive linguistic theories. Within Computer Science and Computational Linguistics, the development of a wide class of so-called situated systems such as robotics, virtual characters, and Geographic Information Systems is heavily dependent on the existence of adequate models of spatial language in order to allow users to interact with these systems when standard graphical, textual, or tactile modes of communication are infeasible or inconvenient.

Competence in spatial language requires that we assign appropriate meaning to spatial terms such as projective, perspective, topological, distance, and path descriptive markers. However, it is not the case that a given linguistic unit such as a spatial preposition has a meaning that can be described in terms of a single qualitative or quantitative model. The same preposition can have multiple meanings, and such variance must be handled through either underspecified models that can be stretched to particular situations, or models which incorporate multiple disparate meanings that are assigned to terms as a situation invites, or models that take into account vague interpretations in situated contexts. In spite of some formal proposals in this area, such heterogeneous meaning accounts are rarely seen in practical computational systems. Moreover, while early models of spatial term interpretation focused on the geometric interpretation of spatial language, it is now widely recognized that spatial term meaning is also dependent on functional and pragmatic features. Competent models of spatial language must thus draw on complex models of situated meaning, and while some early proposals exist, it is not at all clear how geometric, functional and pragmatic features should be integrated in computational models of spatial language interpretation.

The aim of the CoSLI 2010 workshop is to draw together the often orthogonal views on formal symbolic and embodied spatial language interpretation in order to foster theories which adequately draw on both geometric and functional spatial language meaning. On one hand, formal symbolic approaches have attempted to assign meaning to spatial terms through well defined theories that provide a natural symbolic backbone to connect spatial meaning with heterogeneous sources of knowledge and reasoning. These symbolic models, however, often simplify and generalize spatial term meanings and ignore their various situated interpretations. On the other hand, embodied quantitative interpretation models assign meaning to spatial terms through spatial templates which relate the symbolic level to sub-symbolic knowledge such as sensory-motor information and spatial representations more suited to real situated systems. These quantitative models, however, often define templates in a rigid way that allows only few generalizations. By drawing together these formal symbolic and embodied models of spatial meaning we wish to move the research community towards models of spatial meaning which couple embodied geometric and functional features in order to improve and support situated natural language interpretation systems.

Workshop Organization

Organising Committee

Robert Ross	Artificial Intelligence Group, Dublin Institute of Technology, Ireland
Joana Hois	Research Center on Spatial Cognition (SFB/TR 8), University of Bremen, Germany
John Kelleher	Artificial Intelligence Group, Dublin Institute of Technology, Ireland

Programme Committee

John Bateman	University of Bremen, Germany
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Robert Porzel	University of Bremen, Germany
Terry Regier	UC Berkeley, USA
David Schlangen	University of Potsdam, Germany
Andrea Tyler	Georgetown University, Washington, DC, USA

Invited Speaker

Terry Regier	Linguistics and Cognitive Science, UC Berkeley, USA

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R. Ross, J. Hois, J. Kelleher
CoSLI 2010 Program Chair