Guest Editorial Preface

Special Issue on Modeling Human Activities

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Understanding and modeling human activities is essential for designing and evaluating interactive systems. Models of tasks and activities help to make explicit the assumptions that not only influence the shaping of the system under design, but also guide the overall development process.

Task modeling is one of the oldest techniques in Human-Computer Interaction (Diaper & Stanton, 2003). It is assumed that people create and employ mental representations to accomplish tasks using the computer. Early cognitive modeling approaches such as GOMS by Card et al. (1983) model the human mind as an information processing system and describe tasks in terms of goal hierarchies, operators, methods and selection rules. While the GOMS approaches originally aimed at predicting task performance and workload they were later also applied to designing and evaluating user interfaces of interactive systems (John & Kieras, 1996).

A more systematic application of task models to the design of user interfaces is suggested in the Cameleon Reference Framework (Calvary et al., 2003), which describes the development process by sequences of transformations from Concepts & Task models to Abstract User Interface, to Concrete User Interfaces, and to Final User Interfaces. The framework is based on formal task notations such as TKS (Task Knowledge Structures) by Johnson (1992) and CTT (Concurrent Task Trees) by Paterno et al. (1997). A comprehensive comparison of different task modeling approaches is provided by Limbourg & Vanderdonckt (2003).

Task-based modeling approaches are still dominant in the engineering of user interfaces. However, they have been criticized since their inception for their limited view on human activities (Suchman, 1987). Alternative approaches such as resource-based design (Wright et al., 2000) consider human activity as a continuous interplay between external and internal artifacts rather than a sequence of subtasks and operations. Actions are constrained by available resources and humans appropriate their environment according to their goals.

The first paper of this special issue "Modelling Human Activity in People-Oriented Programming with Metamodels" by Steve Goschnick, Leon Sterling & Liz Sonenberg starts with a comparison of different activity modeling approaches. This is followed by a discussion about the agent oriented paradigm and its relation to People-Oriented Programming. Cognitive models are drawn from the Agent-Oriented paradigm and Cognitive Task Modelling.

In the second paper "Viewpoint modelling with emotions: A Case Study" by Maheswaree Kissoon Curumsing, Antonio Lopez Lorca, Tim Miller, Leon Sterling, and Rajesh Vasa, viewpoints with emotions are introduced to the object-oriented paradigm. The work is based on the idea of use cases (Jacobson et al., 1992), which support an understanding of the why and how of using an interactive software system. The authors emphasize that the viewpoints of the stakeholders have to be understood to build the right system. The paper extends an existing viewpoint framework to

additionally capture emotional viewpoints. It is demonstrated how these viewpoints are developed from early-phase requirements to detailed software design. A case study is provided of an emergency alarm system for older people that include the entire suite of suggested models.

The third paper of this issue is written by Birgit Bomsdorf, Rainer Blum, and Daniel Künkel and has the title "Towards ProGesture, a Tool Supporting Early Prototyping of 3D-Gesture Interaction". It proposes a tool-supported model-based design approach to systems that allow an interaction by gestures. The authors argue that the layout of a user interface has a strong influence on the gestures that can be applied in certain circumstances. However, aspects of the layout are considered in 'traditional' approaches, which are geared to the design of graphical user interfaces, only in the Final User Interfaces (Calvary et al., 2003). In gesture-based interaction, layout and dialog design have to be intertwined from the beginning. To illustrate their points, the authors discuss different versions of dialogs and interactions with a fancy coffee machine.

Collections like the one presented in this special issue depend in fundamental ways on their contributors. Therefore, as guest editors our gratitude is mainly to them. However, special thanks are also owed to the editors in chief of the International Journal of People-Oriented Programming (IJPOP) Steve Goschnick and Leon Sterling for their patience and encouragement. Additionally, we would like to thank the publisher IGI GLOBAL for providing their support.

We believe that the selected papers provide interesting insights into different approaches of modelling human activities. We hope that the readers enjoy this special issue and get some inspiration for their own work.

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