THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN INFORMATICS

Designing Human-Centered Hybrid Decision Support Systems

Lu Cao

Department of Applied Information Technology

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Forskningsgången 6, Campus Lindholmen, Göteborg

Faculty opponent: Professor Tero Päivärinta, Division of Digital
Services and Systems, Department of Computer Science,
Electrical and Space Engineering, Luleå University of Technology

UNIVERSITY OF GOTHENBURG

Abstract:

Innovative decision support systems (DSSs) are revolutionizing key processes in organizations. These systems are used in managerial decision-making to solve increasingly complicated decision tasks, for example, using artificial intelligence. This research starts with the observation from practitioners' workshops that they have significant concerns about existing DSSs. Earlier research also shows that DSSs have often been designed with an over-emphasis on machine capabilities. This one-sided design approach is problematic since it ignores human capabilities in decision-making.

Consequently, organizations need more advanced DSSs that take account of two aspects: 1) they are designed with a human-centered intent; and 2) these DSSs should better utilize the complementary capabilities of humans and machines. In this study, such DSSs are called human-centered hybrid decision support systems (HC-HDSSs).

The purpose of this dissertation is to contribute design knowledge supporting the development of HC-HDSSs. To achieve results, the action design research method has been used to build, intervene in, and evaluate the designed HC-HDSSs in three iterations. Two main results are presented: 1) a prototype of HC-HDSSs, which serves as an example of HC-HDSSs; and 2) five design principles concerning how HC-HDSSs should be developed.