

# Preface

Information systems have been developed in parallel with computer science, although information systems have roots in different disciplines including mathematics, engineering, and cybernetics. Research in information systems is by nature very interdisciplinary. As it is evidenced by the chapters in this book, dynamics of information systems has several diverse applications.

The book presents the state-of-the-art work on theory and practice relevant to the dynamics of information systems. First, the book covers algorithmic approaches to numerical computations with infinite and infinitesimal numbers. Also the book presents important problems arising in service-oriented systems, such as dynamic composition, analysis of modern service-oriented information systems, and estimation of customer service times on a rail network from GPS data. After that, the book addresses the complexity of the problems arising in stochastic and distributed systems. In addition, the book discusses modulating communication for improving multi-agent learning convergence. Network issues, in particular minimum risk maximum clique problems, vulnerability of sensor networks, influence diffusion, community detection, and link prediction in social network analysis, as well as a comparative analysis of algorithms for transmission network expansion planning are described in subsequent chapters.

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