Preface

This book aims to provide important information to researchers, educators, and software developers of computer-based educational software ranging from e-learning and mobile learning systems to educational games, including stand-alone educational applications and intelligent tutoring systems. In particular, this book explains how fuzzy logic can be used to automatically model the learning or forgetting process of a student. Also, it describes an innovative module, which is responsible for tracking cognitive state transitions of learners with respect to their progress or non-progress. Therefore, this book shows how personalized tutoring modeling may be achieved by taking into account either how a student is making progress in learning or how the student's knowledge can decrease. In order to make the student modeling process clear, a review of the literature concerning student modeling during the past decade is included in a special chapter. This chapter aims to answer the three basic questions on student modeling: what to model, how and why. It presents comparative tables that are the results of a 10-year review study in student modeling. So the particular chapter can be, also, used as a guide for making decisions about the techniques that should be adopted when designing a student model for an adaptive tutoring system. However, the work presented in this book is not limited to adaptive instruction, but can also be used in other systems with changeable user states, such as e-shops, where consumers' preferences change over time and affect one another. Thereby, this book can provide important information not only to those interested in educational systems and student modeling, but also to all researchers and software developers who are interested in user modeling in any adaptive and/or personalized system.