

Preface

Pervasive computing envisions “smart” places where people are assisted in their daily life by various technologies that move to the background, being invisible yet significantly helpful. To provide such technologies a rapidly growing research area called *context-awareness* has emerged, to make pervasive applications more intelligent and accessible. Humans, the centre of pervasive computing, however, are social beings. Hence, the notion of *social context-awareness* can advance the field further in achieving the vision of pervasive computing. As such, recently a vibrant research direction is introduced, entitled *Pervasive Social Computing*, which is a novel collective paradigm derived from pervasive computing, social media, social networking, social signal processing and multi-modal human-computer interaction. It aims to take advantage of human *social context* to enable the fulfilment of user tasks on the move, ultimately promoting individual well being and social productivity. With the increasing prevalence and features of advanced mobile devices, interest has grown in *socially aware* mobile applications, where the applications will be aware of users’ social context and be able to assist them in their daily activities.

Developing socially aware applications is challenging. **First**, the socially aware applications need different types of social context information such as *social roles*, *social relationships*, *social interactions* and *situations*. These different types of social context information need to be *modelled*, *represented* and *acquired* from various sources for use by the applications. **Second**, an application may need social context information that is not directly available from context sources but can be inferred from the acquired basic information. Thus, there is the need to define and obtain *inferred* social context information from the acquired basic information. **Third**, the users’ social context information is inherently sensitive and can be used to infer further information. The users should be allowed to specify their *privacy preferences* regarding access to their information. **Fourth**, much of the

users' social context information is *dynamic* and continuously changes. The socially aware applications need to support *adaptation* to cope with the changes in social context information.

This book introduces a novel *framework* to address the aforementioned challenges in developing socially aware applications. The framework includes an *approach* to model, represent, reason about and manage different types of social context, and a *platform* for acquiring, storing, provisioning and managing social context information to aid the development and operation of socially aware applications. This book reports several important research contributions. **Firstly**, the proposed framework provides an ontology-based *social context model*, including an *upper* social context ontology which can be customised and specialised to form *domain-specific* ontologies. **Secondly**, the framework provides an ontology-based approach to define *rules* for *deriving* and *abstracting* social context information. It also proposes an approach to *inferring* user situations by correlating historical interaction events. **Thirdly**, the framework provides an ontology-based socially aware *access control policy model* and *language* for owners to control access to their information at different levels of granularity. **Fourthly**, the framework also provides a way to model and represent *runtime social interactions* from both the *domain-* and *player perspectives* to support mediated social interactions and manage their adaptation to cope with the changes in user requirements and environments. **Finally**, the framework provides a *platform* for acquiring, storing and provisioning social context information, executing social interaction models and managing their runtime adaptation. This book also presents two *case studies* that validate and evaluate the different functionalities of the framework and its underlying approach and platform.

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