Ubiquitous Computing: Smart Devices, Environments and Interactions

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DESCRIPTION

This book provides an introduction to the complex field of ubiquitous computing

Ubiquitous Computing (also commonly referred to as Pervasive Computing) describes the ways in which current technological models, based upon three base designs: smart (mobile, wireless, service) devices, smart environments (of embedded system devices) and smart interaction (between devices), relate to and support a computing vision for a greater range of computer devices, used in a greater range of (human, ICT and physical) environments and activities. The author details the rich potential of ubiquitous computing, the challenges involved in making it a reality, and the prerequisite technological infrastructure. Additionally, the book discusses the application and convergence of several current major and future computing trends.

Key Features:

• Provides an introduction to the complex field of ubiquitous computing

• Describes how current technology models based upon six different technology form factors which have varying degrees of mobility, wireless connectivity and service volatility: tabs, pads, boards, dust, skins and clay, enable the vision of ubiquitous computing

• Describes and explores how the three core designs (smart devices, environments and interaction) based upon current technology models can be applied to, and can evolve to, support a vision of ubiquitous computing and computing for the future
• Covers the principles of the following current technology models, including mobile wireless networks, service-oriented computing, human computer interaction, artificial intelligence, context-awareness, autonomous systems, micro-electromechanical systems, sensors, embedded controllers and robots

• Covers a range of interactions, between two or more UbiCom devices, between devices and people (HCI), between devices and the physical world.

• Includes an accompanying website with PowerPoint slides, problems and solutions, exercises, bibliography and further reading

Graduate students in computer science, electrical engineering and telecommunications courses will find this a fascinating and useful introduction to the subject. It will also be of interest to ICT professionals, software and network developers and others interested in future trends and models of computing and interaction over the next decades.

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### ABOUT THE AUTHOR

**Stefan Poslad** holds a PhD in computing from the University of Newcastle upon Tyne, UK. He is currently a lecturer and a researcher in the Intelligent Communication Lab at QMUL. He has extensive experience at developing and delivering course material in related areas and at applying ambient intelligent approaches involving agents, context aware, smart mobile devices and sensors.

**Michael Berger** has been involved in Computer Science research for the last 12 years, specializing in Computer Supported Cooperative Work (CSCW), Distributed and Ubiquitous Systems as well as Multi-Agent Systems research. Since 1997 Dr. Berger is a member of the Intelligent Autonomous Systems research group at Siemens Corporate Technology (CT) in Munich and is involved in several technical and team management functions, responsible for product developments in the telematics area and chair of several activities. Since 2002 Dr. Berger has been heading the technology and competence field "Mobile and Ambient Intelligence Technologies" within Siemens CT.

**Robert M. Patton** is a research associate with the Applied Software Engineering Research group of Oak Ridge National Laboratory. He is currently the principle investigator of the Orion Project, which focuses on the application of intelligent software agents for sensor data fusion. In addition, Dr. Patton works on a number of different projects involving software agents, computational intelligence, and applications to information fusion.

**Patricia Charlton** has over 15 years of research experience in the field of Artificial Intelligence and Multi-Agent systems. This experience covers all aspects from project inception and proposal, through design and implementation, on to end user studies and field trials of the systems developed. This includes being prime coordinator of two large EU projects. Experienced in strategic,
management and technical roles within Motorola Labs and author of over 50 papers in the field of AI and multi-agent systems and of 9 filed patents.

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