

Keynote Speeches

First Keynote Speech

Franco Zambonelli, "Browsing the World in the Pervasive Computing Continuum: Challenges and Directions for Middleware Research"

ABSTRACT:

The imminent mass deployment of pervasive computing technologies, together with Web 2.0 participatory tools, will soon make available an incredible amount of information (at the very extreme, a spatio-temporal continuum of information) about the physical and social worlds and their processes. This trend opens up the possibility of conceiving innovative mobile and context-aware services for "browsing the world" around us, as well as of enhancing the quality and effectiveness of current Web and Telecommunication services.

However, this also introduces a dramatic complexity increase in data and service management, calling for innovative and challenging solutions at the middleware level. In this talk, after having introduced my general vision of future pervasive computing scenarios, I will try to identify the key research challenges that should be faced by middleware researchers towards the effective provisioning of self-organizing and context-aware services in such scenarios, and will sketch some possibly promising research directions currently being investigated within the "Agents and Pervasive Computing Group" of the Università di Modena e Reggio Emilia.

SPEAKER BIO

Franco Zambonelli is professor in Computer Science at the University of Modena and Reggio Emilia since 2001. He obtained the Laurea degree in Electronic Engineering in 1992, and the PhD in Computer Science in 1997, both from the University of Bologna. His current research interests include: distributed and pervasive computing, autonomic computing and communication, software engineering for agent systems. In these areas, he has published 1 monograph, over 40 papers in international journals, co-edited 7 books, and received several best paper awards. He has been invited speaker and tutorialist in several international conferences and workshops. He is in the Editorial Board of several major journals, including the Elsevier Journal of Pervasive and Mobile Computing and the ACM Transactions on Autonomous and Adaptive Systems. In addition to being member of the program committee of several major conferences and workshops in his areas of interest, he has been Program Vice-Chair for 5th IEEE International Conference on Pervasive Computing and Communication (2005), and will be general chair for the 2008 edition of the IEEE International Conference on Self-Adaptive and Self-Organizing Systems. He has been member of the management committee of the European Network of Excellence "Agentlink II" (2000-2003) and, within the same network, coordinator of the Special Interest group on "Methodologies and Software Engineering for Agent Systems". He is currently Scientific Manager for the European Integrated FET Project "CASCADAS".

Second Keynote Speech

Franco Accordino, "Middleware and operating systems for the future mobile and wireless world: a European perspective"

ABSTRACT:

Last decade's advances in distributed, mobile, and ubiquitous systems have led to computing environments characterized by an unprecedented degree of complexity. Variations in resource availability, network connectivity, and hardware and software platforms impact greatly the performance of user applications and quality of services, while multiplying the efforts and costs required to system development, integration, upgrade and operation. Existing middleware and operating systems offer very little support for managing of, adapting, and reacting to complex contextual changes occurring in emerging mobile and ubiquitous environments; so far, all the work has been left to various type of middleware, to the applications or to users and system administrators who must take care of them manually. If on the one hand middleware has ensured inter-operability among disparate resources, on the other hand the proliferation of often incompatible middleware-based solutions has lead to an increased and expensive level of complexity. While the computing and knowledge capabilities are "escaping from the box" to pervade our everyday lives, the big technological challenge is to be able to "orchestrate" such immense power in the same way that operating systems did in the past forty years for the capabilities "inside-the-box". This poses radically new S&T challenges requiring new theoretical foundations and conceptualization work, aiming at re-thinking long-cherished middleware and operating systems design and implementation principles.

This presentation provides an overview of the activities funded by the European Commission in the field of emerging technologies and infrastructures, grids, network centric operating systems, software and service technologies under the ICT Theme of the Seventh Research Framework Programme (FP7).

SPEAKER BIO

Franco Accordino is the Assistant to the Director of "Emerging Technologies and Infrastructures" within the European Commission's Information Society and Media Directorate-General. The Directorate's main goals are: identifying new research paths beyond mainstream ICT research and assessing their viability through advanced experimental facilities; developing new technologies and services for the open and secure internet of tomorrow; building and deploying the future European research and education infrastructures; fostering new initiatives and the related mechanisms (e.g. pre-commercial procurement) for the promotion of a sustainable European innovation space

In FP6 (2003-2006) he has been a scientific officer in the area on Grid technologies, Service Oriented Architectures and Network Centric Operating Systems. In FP7, he works mainly on the development of a vision and strategy for future ICT, with particular focus on future and emerging technologies (FET), e-Infrastructures and virtual research communities including research networks, grids and data infrastructures, new paradigms and experimental facilities for the future internet, ICT for trust and security.

Before joining the European Commission, he worked at the ETH/CSCS National Supercomputing Centre of Switzerland, at Consorzio Pisa Ricerche and at the National Research Council of Italy where he conducted research on formal methods, languages and tools for concurrent systems and protocol specification. He has a long-standing experience in several information technology fields, including formal methods and software engineering, grid and distributed systems, operating systems, web-based applications and services and knowledge discovery in databases.

Session Contents

Session 1 – Location (5 papers)

Invited paper: “Efficient Indoor Proximity and Separation Detection for Location Fingerprinting”

Authors: M.B. Kjærgaard, G. Treu, P. Ruppel, and A. Küpper

Contact Author Affiliation: Ludwig Maximilians University Munich, Germany

“An Approach to Increase the Scalability of Location Systems in WLAN Networks”

Authors: I. Martin-Escalona, and F. Barcelo-Arroyo

Contact Author Affiliation: Universitat Politecnica de Catalunya, Spain

“Name-based Location Service for Mobile Agents in Wireless Sensor Networks”

Authors: S. Suenaga, and S. Honiden

Contact Author Affiliation: University of Tokyo, Japan

“Localization Using Neural Networks in Wireless Sensor Networks”

Authors: A. Shareef, Y. Zhu, and M. Musavi

Contact Author Affiliation: University of Maine, USA

“Middleware-based Solution to Offer Mobile Presence Services”

Authors: V. Beltran, and J. Paradells

Contact Author Affiliation: Technical University of Catalonia, Spain

Session 2 – Context Management and Context-aware Services (4 papers)

Invited paper: “Supporting Location-Aware Services for Mobile Users with the Whereabouts Diary”

Authors: N. Bicocchi, G. Castelli, M. Mamei, A. Rosi, and F. Zambonelli

Contact Author Affiliation: University of Modena and Reggio Emilia, Italy

“Bridging Context Management Systems for Different Types of Pervasive Computing Environments”

Authors: C. Hesselman, H. Benz, P. Pawar, F. Liu, M. Wegdam, M. Wibbels, T. Broens, and J. Brok

Contact Author Affiliation: University of Twente, The Netherlands

“Middleware for Multi-Interfaces Management through Profiles Handling”

Authors: J.-M. Bonnin, Z. Ben Hamouda, I. Lassoued, and A. Belghith

Contact Author Affiliation: GET/ENST-Bretagne, France

“Semantic Middleware for Context Services Composition in Ubiquitous Computing”

Authors: A. Chibani, K. Djouani, and Y. Amirat

Contact Author Affiliation: Paris XII University, France

Industrial Session (organized by Antonio Manzalini)
Mobile Service InDUstry B2B Event (M-SIDE) (3 presentations)

“Autonomic Wireless Communications in Digital Cities: an Experimental Use Case”

Authors: A. Fusco, A. Manzalini, C. Moiso, H.M. Blazquez, J.S. Pareta, S. Spadaro

Affiliations: Telecom Italia Lab, Italy, and Universitat Politècnica de Catalunya, Spain

“Assessment Approaches for Future Mobile Systems”

Author: Peter H. Deussen

Affiliation: Fraunhofer FOKUS, Germany

“Have Services "Your Way"”

Author: Massimo Paolucci

Affiliation: DoCoMo European Laboratories, Germany

Session 3 –Wireless Sensor and Vehicular Networks (5 papers)

“Nano-kernel: A Dynamically Reconfigurable Kernel for WSN”

Author: S. Bagchi

Contact Author Affiliation: Samsung Electronics Ltd., India

“RCCT: Robust Clustering with Cooperative Transmission for Energy Efficient Wireless Sensor Networks”

Authors: M. Ghelichi, S.K. Jahanbakhsh, and E. Sanaei

Contact Author Affiliation: Sharif University of Technology, Iran

“Design Guidelines for Integration of Wireless Sensor Networks with Enterprise Systems”

Authors: L. Gomez, A. Laube, and A. Sorniotti

Contact Author Affiliation: SAP Research, France

“Hardware Support for a Wireless Sensor Network Virtual Machine”

Author: H. Oi

Contact Author Affiliation: University of Aizu, Japan

“Virtual Access Points for Vehicular Networks”

Authors: N. Frangiadakis, D. Camara, F. Filali, A.A.F. Loureiro, and N. Roussopoulos

Contact Author Affiliation: University of Maryland, USA

Session 4 – Security (4 papers)

“Using SELinux Security Enforcement in Linux-based Embedded Devices”

Authors: B. Vogel, and B. Steinke

Contact Author Affiliation: Nokia Research Center, Germany

“New Efficient Intrusion Detection and Prevention System for Bluetooth Networks”

Author: K.M.J. Haataja

Contact Author Affiliation: University of Kuopio, Finland

“Secure Communication Method in Mobile Wireless Networks”

Authors: M. Tanabe, and M. Aida

Contact Author Affiliation: Tokyo Metropolitan University, Japan

“Privacy Guaranteeing Execution Containers: One Time Use of Personal Data by Location Based Services”

Authors: P. Langendoerfer, and M. Maaser

Contact Author Affiliation: IHP Microelectronics, Germany

Session 5 – IMS and Multimedia (3 papers)

Invited paper: “Requirements for an Extendible IMS Client Framework”

Authors: A. Bachmann, A. Motanga, and T. Magedanz

Contact Author Affiliation: Fraunhofer Institute FOKUS, Germany

“Session and Media Signaling for IPTV via IMS”

Authors: C. Riede, A. Al-Hezmi, and T. Magedanz

Contact Author Affiliation: Fraunhofer Institute FOKUS, Germany

“Reference Architecture for Mobility Enhanced Multimedia Services”

Authors: T. Sutinen, and T. Frantti

Contact Author Affiliation: VTT Technical Research Center, Finland

Session 6 – Multiple Interfaces and Vertical Handoff (5 papers)

“Optimal Usage of Multiple Network Connections”

Authors: A. Setamaa-Karkkainen, and J. Kurhinen

Contact Author Affiliation: University of Jyvaskyla, Finland

“Intelligent Seamless Vertical Handoff Algorithm for the Next Generation Wireless Networks”

Authors: Jiping Lv, Yuanchen Ma, and S. Yoshizawa

Contact Author Affiliation: Hitachi R&D, China

“LINE: Link Information Normalization Environment”

Authors: U. Toseef, A. Udugama, C. Goerg, V. Pangboonyanon, and F. Pittmann

Contact Author Affiliation: University of Bremen, Germany

“A Layered Infrastructure for Mobility-Aware Best Connectivity in the Heterogeneous Wireless Internet”

Authors: P. Bellavista, C. Giannelli, and A. Corradi

Contact Author Affiliation: University of Bologna, Italy

“Realization of Multiple Access Interface Management and Flow Mobility in IPv6”

Authors: U. Toseef, A. Udugama, C. Goerg, C. Fan, and F. Pittmann

Contact Author Affiliation: University of Bremen, Germany

Session 7 – Applications (4 papers)

Invited paper: “The MobiSoC Middleware for Mobile Social Computing: Challenges, Design, and Early Experiences”

Authors: C. Borcea, A. Gupta, A. Kalra, Q. Jones, and L. Iftode

Contact Author Affiliation: New Jersey Institute of Technology, USA

“Analysis of Application Partitioning for Massively Multiplayer Mobile Gaming”

Authors: Madan Kumar M.M., A. Thawani, Sridhar V., and Y.N. Srikant

Contact Author Affiliation: IISC Campus, Bangalore, India

“Recoverable Class Loaders for a Fast Restart of Java Applications”

Authors: V. Nikolov, and R. Kapitza

Contact Author Affiliation: University of Erlangen-Nurnberg, Germany

“Content Sharing Middleware for Mobile Devices”

Authors: P. Belimpasakis, J.-P. Luoma, and M. Borzsei

Contact Author Affiliation: Nokia Research Center, Tampere, Finland

Session 8 – Mobility Modeling and Management (4 papers)

“An Agent-based Framework for Integrating Mobility into Grid Services”

Authors: T.E. Athanaileas, N.D. Tselikas, G.V. Tsoulos, and D.I. Kaklamani

Contact Author Affiliation: National Technical University Athens, Greece

“A Pro-active Mobility Extension for Pub/Sub Systems”

Authors: A. Gaddah, and T. Kunz

Contact Author Affiliation: Carleton University, Canada

“Topology Variety Model for Mobile Ad Hoc Networks”

Authors: Guangli Tian, Wandong Cai, and Wei Wang

Contact Author Affiliation: Northwestern Polytechnic University, USA

“Code Mobility Modeling: a Temporal Labeled Reconfigurable Nets”

Authors: K. Laid, and C. Allaoua

Contact Author Affiliation: Biskra University, Algeria

Session 9 – Surveillance Services (3 papers)

“A Web-based Surveillance System for Mobile Phones”

Authors: Y. Imai, Y. Hori, Y. Suigiue

Contact Author Affiliation: Kagawa University, Japan

“Controlling Remote System using Mobile Telephony”

Authors: R. Shahriyar, E. Hoque, I. Naim, S.M. Sohan, and M. Akbar

Contact Author Affiliation: Bangladesh University of Engineering and Technology, Bangladesh

“A Remote Monitoring and Control of Home Appliances on Ubiquitous Smart Homes”

Authors: S. Joon Lee, Y. Hwan Kim, S. Soo Kim, and K. Seon Ahn

Contact Author Affiliation: Kyungpook National University, Republic of Korea

Session 10 – Communication Layer Issues (4 papers)

“Channel Estimation and Equalization for Fixed/Mobile OFDM WiMAX System in Simulink”

Authors: O. Abdel Alim, N. Elboghhdady, M. Ashour, and A.M. Elaskary

Contact Author Affiliation: National Center for Radiation Research and Technology, Egypt

“On Communication Protocols for Tactical Navigation Assistance”

Authors: E. Onem, H. Birkan Yilmaz, F. Alagoz, and T. Tugcu

Contact Author Affiliation: Bogazici University, Turkey

Monitoring Smartphones for Anomaly Detection”
Authors: A.-D. Schmidt, F. Peters, F. Lamour, and S. Albayrak
Contact Author Affiliation: Technische Universitat Berlin, Germany

“Activity Recognition System for Mobile Phones Using the MotionBand Device”
Authors: A. Fabian, N. Gyorbiro, and G. Homanyi
Contact Author Affiliation: Nokia Siemens Networks, Hungary

Session 11 – Middleware and Framework Architectures (3 papers)

“Modular, Service-Oriented API for Peer-to-Peer Middleware”
Authors: G. Paller, and H. Kokkinen
Contact Author Affiliation: Nokia Siemens Networks, Hungary

“MWSMF: a Mediation Framework Realizing Scalable Mobile Web Service Provisioning”
Authors: S.N. Srirama, M. Jarke, and W. Prinz
Contact Author Affiliation: RWTH Aachen, Germany

“AGORA: an Integrated Approach for Collaboration in MANETs”
Authors: M. Arrufat, G. Paris, and P. Garcia Lopez
Contact Author Affiliation: Universitat Rovira I Virgili, Tarragona, Spain

Session 12 – Routing and Communication Encoding (3 papers)

Invited paper: “MACRO+: a Network Coding Driven Integrated MAC/Routing Protocol for Multihop Wireless Networks”
Authors: L. Galluccio, A. Leonardi, G. Morabito, and S. Palazzo
Contact Author Affiliation: University of Catania, Italy

“The Study and Simulation of Connectivity Based Routing Protocols in Ad Hoc Networks”
Author: Yuan Peiyan
Contact Author Affiliation: Henan Normal University, China

“Cross-Layer Routing-Scheduling in IEEE 802.16 Mesh Networks”
Authors: M.S. Kuran, G. Gur, T. Tugcu, and F. Alagoz
Contact Author Affiliation: Bogazici University, Turkey

Accepted Papers Statistics (5 invited, 42 accepted from open call, acceptance rate=53%)

Europe - 29 papers (out of 47): Germany (10), Finland (4), France (3), Italy (3), Spain (3), Hungary (2), Turkey (2), Greece (1), The Netherlands (1)

Asia - 10 papers (out of 47): Japan (4), R.P. China (2), India (2), Bangladesh (1), South Korea (1)

North America – 5 papers (out of 47): USA (4), Canada (1)

Africa and Middle East – 3 papers (out of 47): Algeria (1), Egypt (1), Iran (1)