About the Contributors

Pietro Lio is a Senior Lecturer in the Computer Laboratory which is the department of Computer Science of the University of Cambridge and a member of the Artificial Intelligence group of the Computer Laboratory. He has an interdisciplinary approach to research and teaching and holds a PhD in Complex Systems and Non Linear Dynamics (School of Informatics, dept of Engineering of the University of Firenze, Italy) and a PhD in (Theoretical) Genetics (University of Pavia, Italy). His current research interest is the investigation of biomedical processes employing a combination of techniques, ranging from machine learning to deterministic and stochastic models.

Dinesh Verma is a researcher and department group manager in the IT & Wireless Convergence area at IBM T J Watson Research Center, Hawthorne, New York. He received his doctorate in Computer Networking from University of California Berkeley in 1992, the Bachelor’s in Computer Science from Indian Institute of Technology, Kanpur, India in 1987, and a Master’s in Management of Technology from Polytechnic University, Brooklyn, NY in 1998. He holds over thirty US patents related to computer networks, and has authored over sixty papers and eight books in the area. He is the program manager for the US/UK International Technology Alliance in Network Sciences. He is a fellow of the IEEE, and has served in various program committees and technical committees. His research interests include topics in wireless networks, network management, distributed computing, and autonomic systems.

Andre Gruning is currently a Lecturer in the Computing Department at University of Surrey and has been working as a researcher at SISSA, Trieste, Italy, and University of Warwick, UK. He obtained his PhD in Computer Science from the University of Leipzig, Germany and his first degree in Theoretical Physics from the University of Goettingen, Germany. His research interests are in the field of learning algorithms for neural networks, cognitive modeling, and evolutionary systems.

Andrea Perna is a Biologist interested in the common properties observed at different levels of biological organization. He graduated in molecular biology at the University of Pisa and at the Scuola Normale Superiore of Pisa, Italy, and received a PhD in neurosciences again from Scuola Normale Superiore with Concetta Morrone, working on the mechanisms of visual perception in human brain. He has been a post doctoral researcher at the Research Centre on Animal Cognition in Toulouse, France, and in the Laboratory of Informatics of Nantes, France. He currently holds a research position at ISC-PIF. His current research mainly focuses on the formation of spatio-temporal patterns as a result of collective behavior of animals.
Andreas Pitsillides is a Professor at the Department of Computer Science, University of Cyprus, and heads the Networks Research Laboratory (NetRL). He is also a Founding member and Chairman of the Cyprus Academic and Research Network (CYNET) since its establishment in 2000. He has published over 200 research papers and book chapters, and he is the co-editor of the book on modeling and control of complex systems. His research interests include fixed and wireless networks (ad-hoc and sensor networks, TCP/IP, WLANs, UMTS Third Generation mobile networks and beyond), flow and congestion control, resource allocation and radio resource management, and Internet technologies and their application in mobile e-services, e.g. in tele-healthcare, and security issues. He has a particular interest in adapting tools from various fields of applied mathematics such as non-linear control theory, computational intelligence, complex systems, and nature inspired techniques, to solve problems in computer networks. He received the B.Sc. (Hns) degree from University of Manchester Institute of Science and Technology (UMIST) and PhD from Swinburne University of Technology, Melbourne, Australia, in 1980 and 1993, respectively.

Bernát Wiandt received his BSc degree from Budapest University of Technology and Economics (BUTE) in 2010. He is currently an MSc student at BUTE, conducting research in the field of self-organizing and adaptive networks, and evolution of communication protocols for his MSc thesis. His primary interests include programming languages and protocol evolution.

Borbála Katalin Benkő is a research fellow at the Dept. of Telecommunications at BUTE. She received her MSc degree in Technical Informatics in 2003 from BUTE and finished the Doctoral School there in 2006. Recently, she participated in two European Union integrated projects (CASCADAS FP6 IST-FET, Ambient Networks FP6 IST), in numerous national research projects, and as member of a data mining team she won 6th place award at the ACM KDDCup challenge in 2008. She published 20+ papers in journals and conferences, and regularly contributes to events as TPC member or organizer. Her research interests include autonomous systems, knowledge modelling, and data mining.

Christian Jost obtained his Doctoral degree from Institut National Agronomique Paris-Grignon in 1998 in the area of temporal dynamics of predator-prey systems. He has since then been working at CNRS; Centre de Recherches sur la Cognition Animale in Toulouse, France, and researching the phenomenon of social behavior in insets. He is currently working in the area of mathematical modeling of social insect behaviors.

Christian Tschudin is a Full Professor for computer networks at the University of Basel. Before joining Basel, he was at Uppsala University as well as ICSI in Berkeley. He received his PhD from the University of Geneva and holds a Master’s degree in Mathematics. Christian Tschudin is interested in network architectures and mobile code, bio-inspired and wireless networks, as well as security.

Daniele Miorandi is the head of the iNSPIRE Area at CREATE-NET, Italy. He received a PhD in Communications Engineering from Univ. of Padova, Italy, in 2005, and a Laurea degree (summa cum laude) in Communications Engineering from Univ. of Padova, Italy, in 2001. He joined CREATE-NET in Jan. 2005, where he is leading the iNSPIRE (Networking and Security Solutions for Pervasive Computing Systems: Research & Experimentation). Since Mar. 2007 he is the coordinator of the European
Dr. Miorandi has co-authored more than 90 papers in internationally refereed journals and conferences. He serves on the Steering Committee of various international events (WiOpt, Autonomics, ValueTools), for some of which he was a co-founder (Autonomics and ValueTools). He also serves on the TPC of leading conferences in the networking field, including, e.g., IEEE INFOCOM, IEEE ICC, and IEEE Globecom. He is a member of IEEE, ACM, and ICST. His research interests include: bio-inspired approaches to networking and service provisioning in large-scale computing systems, modeling and performance evaluation of wireless networks, and prototyping of wireless mesh solutions.

David Lowe is the Director of the Centre for Real-Time Information Networks in the Faculty of Engineering and IT at the University of Technology, Sydney. From 2002 to 2008 he was the Associate Dean, Teaching and Learning for the Faculty of Engineering at UTS, and prior to that he was the Director of Undergraduate Programs and the Head of Computer Systems Engineering. He has active research interests in the areas of Web development and technologies, and software engineering. In particular, he focuses on real-time control in a networked environment, as well as the development and use of remote laboratories. He has published widely in these areas, including three books (most recently Web Engineering: A Practitioner’s Approach, McGraw-Hill, co-authored with Roger Pressman). He is also on numerous Web conference committees and journal editorial boards.

Ederson Rosa da Silva is currently working toward the PhD degree in Electrical Engineering from Universidade Federal de Uberlândia (UFU). He received his BE degree in Electrical Engineering from Universidade Federal de Uberlândia (UFU) in 2007. He is a research scientist in the Computer Networks Laboratory of UFU. His research interests include performance analyses of communication networks, delay and disruption tolerant networks, and genetic algorithms.

Endre Sándor Varga received his MSc degree in Technical Informatics in 2007 at the Department of Telecommunications at BUTE and finished Doctoral School in 2010. He participated in the EU ICST-FET FP6 BIONETS research project. He was recently involved in a simulation based evaluation and validation of the P802.1Q revised IEEE standard at Ericsson. His primary interests are discrete-event simulations, programming languages, internet technologies, and biology inspired computing.

Feng Gu is PhD student in the Intelligent Modelling & Analysis (IMA) group, School of Computer Science at the University of Nottingham, UK. He received his Bachelor degree in Computer Science at Harbin Engineering University, China, and his Master degree in Engineering at the University of Warwick, UK. His research interests include: artificial immune systems, bio-inspired computing, intrusion detection systems, and machine learning.

Go Hasegawa received ME and DE degrees in Information and Computer Sciences from Osaka University, Osaka, Japan, in 1997 and 2000, respectively. From July 1997 to June 2000, he was a Research Assistant of Graduate School of Economics, Osaka University. He is now an Associate Professor of Cybermedia Center, Osaka University. His research is in the area of transport architecture for future high-speed networks. He is a member of the IEEE and IEICE.
Guy Theraulaz is research director and head of team working on Complex Dynamics and Interaction Networks in Animal Societies at Centre de Recherches sur la Cognition Animale in Toulouse, France. He obtained his PhD in neurosciences and animal behavior from University of Provence, Marseille in 1991. He has been subsequently working at CNRS. His research interests include swarm intelligence in natural and artificial systems, self-organization in biological systems, collective behaviors and collective intelligence in animal and human societies, and systems biology.

Ioana Sporea graduated from Politehnica University of Bucharest, Romania, with a degree in Computer Science. She is currently working towards her PhD in the Computing Department at University of Surrey, UK, where she is studying the modelling of multisensory processes using neural networks and learning algorithms in spiking neural networks. She is part of the Nature Inspired Computing and Engineering research group and her main areas of research interests include neural networks and artificial intelligence, psychology, and cognitive science. She is also an IEEE, IET, and SSAISB member.

Jason H. Li received his PhD degree in Electrical and Computer Engineering from the University of Maryland at College Park. He currently leads the Network & Security Group at Intelligent Automation Inc. Dr. Li’s research interests include: computer networks, networks and systems security, network management and control, multi-agent systems, artificial intelligence, distributed systems, and intelligent software agents. Dr. Li has worked on various R&D projects including analysis of QoS routing under heavy-tailed traffic, seamless soft handoff for ad hoc networks, integrated graphical models for intelligent security management, cyber attack assessment, reliable networking over airborne networks, network services for airborne networks, secure routing in airborne networks, key management, et cetera. Dr. Li authored more than 40 publications in the area of communication networks, network protocols, network security, and multi-agent systems. He is a member of the IEEE, ACM, AFCEA, and USENIX.

Julie Greensmith is a Lecturer in School of Computer Science at the University of Nottingham. She is a member of both the Intelligent Modelling & Analysis (IMA) group and the Mixed Reality Lab (MRL). She gained a BSc in Pharmacology from the University of Leeds, UK in 2002 and a MSc in Multidisciplinary Informatics in 2003, also from the University of Leeds and completed a PhD in Computer Science at the University of Nottingham in 2007. Her research focuses on the development of novel AIS algorithms applied to computer security and bio-sensing for the entertainment industry.

Jörg Hähner received his Diploma in Computer Science from the Darmstadt University of Technology, Germany in 2001 and the ‘Dr. rer. nat.’ degree in Computer Science from the University of Stuttgart, Germany in 2006. He worked in the area of data management in mobile ad-hoc networks and was appointed as an Assistant Professor in the System and Computer Architecture Group at Leibniz Universität Hannover, Germany in 2006. His research focuses on architectures and algorithms in the field of Organic Computing (e.g. distributed smart camera systems, mobile ad-hoc and sensor networks, and global scale Peer-to-Peer systems).

Karina Mabell Gomez Chavez was born in Chillanves, Ecuador. She received the engineering degree (cum laude) in Electronic and Telecommunication Engineering from the National Polytechnic School in Ecuador, in 2006. She received her Master’s degree in Wireless Systems and Related Technologies
from the Turin Polytechnic, Italy, during 2007. In year 2007, she joined FIAT Research Center, becoming part of the Infomobility-Communication and location Technologies. Since July 2008, she is part of the iNSPIRE Area at Create-Net, working on the WING project. She is a PhD candidate at University of Trento. Her current research activity is mainly focusing on Green Networking. Her research interests include: WSNs, wireless mesh networks and ad hoc networks, green networking and Simulation (Omnet++, Matlab)

**Masayuki Murata** received the ME and DE degrees in Information and Computer Science from Osaka University, Japan, in 1984 and 1988, respectively. In April 1984, he joined Tokyo Research Laboratory, IBM Japan, as a Researcher. From September 1987 to January 1989, he was an Assistant Professor with Computation Center, Osaka University. In February 1989, he moved to the Department of Information and Computer Sciences, Faculty of Engineering Science, Osaka University. In April 1999, he became a Professor of Cybermedia Center, Osaka University, and is now with Graduate School of Information Science and Technology, Osaka University since April 2004. He has more than five hundred papers of international and domestic journals and conferences. His research interests include computer communication network architecture, performance modeling and evaluation. He is a member of IEEE, ACM, and IEICE. He is a chair of IEEE COMSOC Japan Chapter since 2009. Also, he is now partly working at NICT (National Institute of Information and Communications Technology) as Deputy of New-Generation Network R&D Strategic Headquarters.

**Nooraini Yusoff** is currently a PhD student in the Computing Department at University of Surrey (UK). She is a lecturer in Computer Science at Universiti Utara Malaysia, UUM (Malaysia). She obtained her MSc in Intelligent Systems from UUM. The topic of her PhD is focused around learning aspects in complex networks. Her research interests include spiking neural networks, intelligent systems, and cognitive modelling.

**Pascale Kuntz** received the MS degree in Applied Mathematics from Paris-Dauphine University and the PhD degree in Applied Mathematics from the Ecole des Hautes Etudes en Sciences Sociales, Paris in 1992. From 1992 to 1998, she was Assistant Professor in the Artificial Intelligence and Cognitive Science department at the Ecole Nationale Superieure University (France) where she is currently Professor of Computer Science in the LINA Laboratory. She is head of the team “KOD - KnOwledge and Decision”. She is member of the board of the French Speaking Classification Society. Her research interests include classification, graph mining, graph visualization, and post-mining.

**Paulo Roberto Guardieiro** is a Full Professor at Universidade Federal de Uberlândia, Brazil, where he has worked since 1978. He received his B.E. degree in Electrical Engineering from Universidade Federal de Uberlândia (UFU) in 1978, the degree of M.E.E. from the Instituto Tecnológico de Aeronáutica (ITA), in 1984 and the Ph.D. degree in Electrical Engineering from UNICAMP in 1991. He is the coordinator of the Computer Networks Laboratory of UFU and a member of the Brazilian Society of Telecommunications (SBrT). His research interests include mobile communications, multicast, QoS guarantees, and DTN’s.
About the Contributors

Pavlos Antoniou is currently a PhD student at the Department of Computer Science of the University of Cyprus under the guidance of Prof. Andreas Pitsillides. He received the Diploma Degree (M.Sc. equivalent) from the School of Electrical and Computer Engineering of the National Technical University of Athens, Greece, in 2005. He serves as a Research Associate at the University of Cyprus and he was working for the EU-funded GINSENG project and the locally funded MiND2C project dealing with Performance Control in WSNs. His current research interests include overload control based on nature-inspired techniques such as swarm intelligence and population biology for providing adaptation, robustness, and self-organization in autonomous decentralized environments.

Shouri Chatterjee received his BTech degree in Electrical Engineering from the Indian Institute of Technology (IIT), Madras, in 2000, and his MS and PhD degrees in Electrical Engineering from Columbia University, New York, NY, USA, in 2002 and 2005 respectively. He has been an Assistant Professor in the Department of Electrical Engineering, IIT Delhi since 2006. Dr. Chatterjee has previously worked at Silicon Laboratories Inc., NJ, USA (2005-2006) as a design engineer. His research interests are in the areas of active and passive filter design, ultra low power and ultra low voltage analog circuit design, energy scavenging, and high speed oscillators and frequency synthesis. Chatterjee is the author of the book, “0.5-V Analog Circuit Design Techniques”, (Springer publications, 2007.) He was the recipient of the Edwin Howard Armstrong memorial prize for the best graduating Master’s student from Columbia University in the year 2002. He was the recipient of the Analog Devices’ 2004 Outstanding Student Award. His paper titled, “0.5-V analog circuit techniques and their application in OTA and filter design,” was cited among the top 10 most read articles in the IEEE Journal of Solid State Circuits, 2005. His paper titled, “A 0.5-V 1-Msps Track-and-Hold Circuit With 60-dB SNDR”, in the IEEE Journal of Solid State Circuits, was ranked as 31, in the list of top 100 most accessed papers in the entire IEEE site, in 2006.

Song Luo received his BS in Electrical Engineering from North China Institute of Electric Power in 1995, and received his Master and PhD in Computer Science from the University of Central Florida in 2002 and 2005. Dr. Luo is currently a senior research scientist at Intelligent Automation, Inc. His research interests include wireless ad hoc networking, design of high-performance routing protocols, network management, network traffic engineering, and network security. Dr. Luo has been a PI or key personnel in various research projects on computer networking: “Bio-inspired Robust and Secure Routing Protocol for MANET,” “Adaptive Network Service Discovery,” “An Integrated Architecture for Seamless Soft Handoff in Mobile Ad Hoc Networks,” “Predictable, Scalable QoS Routing for Ad Hoc Wireless Networks Based on Heavy-Tailed Statistics,” “A Cross-layer Approach for Reliable Communication in Airborne Networks,” “A Distributed Cluster-based Emulation Test Bed for Large Wireless Communication Networks,” and “An Intelligent Approach to Enable Space Networking.”

Swades De received his BTech in Radiophysics and Electronics from the University of Calcutta, India, in 1993, MTech in Optoelectronics and Optical Communication from the Indian Institute of Technology (IIT) Delhi, in 1998, and PhD in Electrical Engineering from the State University of New York at Buffalo, NY, USA, in 2004. Before moving to IIT Delhi in 2007, he was an Assistant Professor of Electrical and Computer Engineering at New Jersey Institute of Technology, NJ, USA (2004–2007). He also worked as a post-doctoral researcher at ISTI-CNR, Pisa, Italy (2004), and has five years industry experience in India in telecommunication hardware and software development (1993–1997, 1999). His research
interests include performance study, resource efficiency in multihop wireless and high-speed networks, broadband wireless access, and communication and systems issues in optical networks.

**Sven Tomforde** is a PhD candidate at the System and Computer Architecture Group of Leibniz Universität Hannover, Germany, where he also received his MSc in Computer Science in 2007. His current work focuses on distributed, self-organized, and collaborative control mechanisms (e.g. applied to data communication networks or urban traffic control systems).

**Tadashi Nakano** received the BE, ME, and PhD degrees in Information Systems Engineering from Osaka University in 1999, 2000, and 2002, respectively. He was with Department of Computer Science, Donald Bren School of Information and Computer Sciences, University of California, Irvine, where he was a Postdoctoral Research Scholar from 2002 to 2007 and an Assistant Adjunct Professor from 2007 to 2009. Since 2009, he has been with Frontier Research Base for Global Young Researchers, Graduate School of Engineering, Osaka University, where he is currently an Associate Professor. His research interests are in the areas of network applications and distributed computing systems with strong emphasis on interdisciplinary approaches. His current research is focused on the Biological-ICT (Information and Communications Technology) including design, implementation and evaluation of biologically inspired systems, and synthetic biological systems. Dr. Nakano is an editorial board member of ICST Transactions on Bio-Engineering and Bio-inspired Systems, and Elsevier Journal on Nano Communication Networks. Dr. Nakano is an MSR (Microsoft Research) IJARC fellow and a member of IEEE.

**Thomas Meyer** is a PhD student at the University of Basel, Switzerland. He received his MSc degree in electrical engineering from ETH Zurich in 2000. After that, we worked as software architect with Patton-Inalp Networks, where he contributed to the development of protocols and embedded software for Voice-over-IP devices. In 2007 he joined the Computer Networks Group headed by Prof. Dr. Christian Tschudin where he is exploring chemical and self-healing networking protocols.

**Uwe Aicklein** received a Management Science degree from the University of Mannheim, Germany, in 1996 and a European Master and PhD in Management Science from the University of Wales, Swansea, UK, in 1996 and 1999, respectively. He worked in the Mathematics Department as a lecturer in Operational Research at the University of the West of England in Bristol. In 2002, he accepted a lectureship in Computer Science at the University of Bradford. Since 2003 he works for the University of Nottingham in the School of Computer Science where he is now a Professor of Computer Science and leader of the Intelligent Modeling & Analysis (IMA) group. Prof. Aickelin currently holds an EPSRC Advanced Fellowship focusing on AIS, anomaly detection, and mathematical modeling.

**Vilmos Simon** received his PhD from Budapest University of Technology and Economics (BUTE) in 2009 and is currently a senior lecturer at the Department of Telecommunications. His research interests include self-organizing and adaptive networks, evolution of communication protocols, opportunistic and delay-tolerant networks, mobility management, and energy efficiency in 3G and 4G mobile systems. He participated in several research projects including the EU ICST-FET FP6 BIONETS where he also acted as a WP leader. He published 20+ papers in international journals and conferences, and acts as a reviewer or organizer for numerous scientific conferences.
Yalin Evren Sagduyu received his MS and PhD degrees in Electrical and Computer Engineering at the University of Maryland, College Park, and his BS degree in Electrical and Electronics Engineering at Bogazici University, Turkey. He worked as a postdoctoral fellow at Northwestern University for the DARPA project on IT-MANET (Information Theory for Mobile Ad Hoc Networks). He is currently a Research Scientist with Intelligent Automation Inc, where he has been the principal investigator of several STTR/SBIR projects on cyber superiority, heterogeneous network management, and network monitoring. His research interests are in the areas of design, optimization, and analysis of wireless networks, network coding, information theory, network security, optimization, game theory, and biologically inspired networking. He authored more than 40 papers on network architecture, design, optimization, and analysis of wireless networks, and he has been on technical program committee of major IEEE conferences.