

Welcome

Fabrizio Lombardi



TODAY, the notion of sustainability is one of the core areas in computing; it covers a wide range of problem domains and technologies ranging from software to hardware designs to application domains. Sustainability is needed in both computing devices and infrastructure: from sensors to portable devices and data centers, energy consumption has grown to be a major limitation to usability and performance. Energy costs and the associated infrastructure also constitute a growing proportion of the expense of building and running a typical data center. Therefore, energy efficient computing has become an active area of research, motivated further by environmental concerns and a desire to limit the impact of computing on the ecosystem. Sustainable (Energy Efficient) Computing has become an active area of research in both academia and industry over the last decade. A multi-disciplinary approach is often needed to provide computational support to sustainable computing problems, these requirements are quite formidable, often they pose severe challenges; also an integration of diverse computational fields is urgently needed to provide better solutions for problems that deal with information integration, utilization, aggregation, and generation. Moreover, these problems will remain with us for several decades and will drive developments in information and communications technologies for many years.

As Chair of the Steering Committee of the *IEEE Transactions on Sustainable Computing (TSUSC)*, I welcome all our constituencies, from the readers to the potential authors and the entire Editorial Board. As one of the newest Transactions sponsored by the IEEE, *TSUSC* is expected to meet the above requirements as well as the publication needs of the members from the financial sponsoring societies (IEEE Computer Society and IEEE Communication Society) as well as the technical sponsoring Council (Council of Electronic Design Automation). *TSUSC* is a peer-reviewed journal devoted to publishing high-quality papers that explore the different aspects of sustainable computing. *TSUSC* will address sustainability problems in different computing and information processing environments and technologies, and at different levels of the computational process. These problems can be related to information processing, integration, utilization, aggregation, and generation. Solutions for these problems can call upon a wide range of algorithmic and computational frameworks, such as optimization, machine learning, dynamical systems, prediction and control, decision support systems, meta-heuristics, and game-theory to name a few.

As for its technical coverage, *TSUSC* will cover pure research and applications within novel scope related to sustainable computing, such as computational devices, storage organization, data transfer, software and information processing, and efficient algorithmic information distribution/processing. Articles dealing with hardware/software implementations, new architectures, modeling and simulation, and mathematical models and designs that target sustainable computing problems are encouraged and sought.

Last but not least, I would like to take this opportunity to introduce the new Editor-In-Chief, Prof. Albert Zomaya. As a former EIC of the *IEEE Transactions on Computers* and with his high standing in the technical community, he has all of the experience to ensure that *TSUSC* will be adding further value to the IEEE publication portfolio. I look forward to his contributions and support.

Fabrizio Lombardi
Chair, Steering Committee of the *IEEE TSUSC*





Albert Y. Zomaya is currently the Chair Professor of High Performance Computing & Networking in the School of Information Technologies, University of Sydney. He is also the director of the Centre for Distributed and High Performance Computing which was established in late 2009. Dr. Zomaya was an Australian Research Council Professorial Fellow during 2010-2014 and held the CISCO Systems Chair Professor of Internetworking during the period 2002-2007 and also was head of the school for 2006-2007 in the same school. Prior to his current appointment, he was a full professor in the Electrical and Electronic Engineering Department at the University of Western Australia, where he also led the Parallel Computing Research Laboratory during the period 1990-2002. He served as associate-, deputy-, and acting-head in the same department, and held numerous visiting positions and has extensive industry involvement. Dr. Zomaya has published more than 500 scientific papers and articles and is author, co-author, or editor of more than 20 books. He served as the editor in chief of the *IEEE Transactions on Computers* (2011-2014). Currently, Dr. Zomaya serves as a founding editor in chief of the *IEEE Transactions on Sustainable Computing* and also serves as associate editor for 22 leading journals, such as the *ACM Computing Surveys*, *IEEE Transactions on Cloud Computing*, *IEEE Transactions on Computational Social Systems*, and *Journal of Parallel and Distributed Computing*. Dr. Zomaya is the founding editor of several book series, such as the *Wiley Book Series on Parallel and Distributed Computing*, *Springer Scalable Computing and Communications*, and the *IET Book Series on Big Data*. Dr. Zomaya was the chair of the IEEE Technical Committee on Parallel Processing (1999-2003) and currently serves on its executive committee. He is the vice-chair, IEEE Task Force on Computational Intelligence for Cloud Computing and serves on the advisory board of the IEEE Technical Committee on Scalable Computing and the steering committee of the IEEE Technical Area in Green Computing. Dr. Zomaya has delivered more than 160 keynote addresses, invited seminars, and media briefings and has been actively involved, in a variety of capacities, in the organization of more than 600 conferences. Dr. Zomaya is a fellow of the IEEE, the American Association for the Advancement of Science, and the Institution of Engineering and Technology (UK). He received the 1997 Edgeworth David Medal from the Royal Society of New South Wales for outstanding contributions to Australian Science. Dr. Zomaya is the recipient of the IEEE Technical Committee on Parallel Processing Outstanding Service Award (2011), the IEEE Technical Committee on Scalable Computing Medal for Excellence in Scalable Computing (2011), and the *IEEE Computer Society Technical Achievement Award* (2014). His research interests span several areas in parallel and distributed computing and complex systems. More information can be found at <http://sydney.edu.au/engineering/it/~zomaya/>.