

Innovative Computing and Large Scale Data Centres for Digital Ecosystems

by Prof. *Albert Y. Zomaya*

Centre for Distributed and High Performance Computing, School of Information Technologies, The University of Sydney, Australia

Global warming and climate change trends call for urgent action to manage information and communication technologies in a sustainable manner by minimizing energy consumption and utilizing resources more efficiently. Distributed computing environments have become the de facto platforms for many applications. These systems bring a range of heterogeneous resources that should be able to function continuously and autonomously. However, distributed systems expend a lot of energy which raises a range of important research issues related to the use and virtualisation of ICT resources in a way offers significant potential to contribute to the goal of what has been described as 'green computing'. This talk will review some of the important questions related to the development of new algorithms and tools for energy-aware resource management allocation for large-scale distributed systems enabling these systems to become environmentally friendly.



**Albert Y. Zomaya** is currently the *Chair Professor of High Performance Computing & Networking* and *Australian Research Council Professorial Fellow* in the School of Information

Technologies, The University of Sydney. He is also the *Director of the Centre for Distributed and High Performance Computing* which was established in late 2009.

He is the author/co-author of seven books, more than 360 publications in technical journals and conferences, and the editor of eight books and 11 conference volumes. He is the incoming Editor in Chief, in 2011, of the *IEEE Transactions on Computers*. He is also an associate editor for 19 journals including some of the leading journals in the field, such as, *the IEEE Trans. on Parallel and Distributed Systems* and

*Journal of Parallel and Distributed Computing*

. He is the Founding Editor of the

*Wiley Book Series on Parallel and Distributed Computing*

and the Co-Editor of the

*Wiley Book Series on Bioinformatics*

and the

*Wiley Book Series on Nature Inspired Computing*

. He is the Editor-in-Chief of the

*Parallel and Distributed Computing Handbook*

(McGraw-Hill, 1996). Professor Zomaya was the Chair the

*IEEE Technical Committee on Parallel Processing*

(1999–2003) and currently serves on its executive committee.

He also serves on the advisory board of the IEEE Technical Committee on Scalable Computing,

the advisory board of the Machine Intelligence Research Labs, is a scientific council member of

the *Institute for Computer Sciences, Social-Informatics, and Telecommunications Engineering*

(in Brussels) and member of the board of the

*IEEE Systems, Man, and Cybernetics Society Technical Committee on Self-Organized*

*Distributed and Pervasive Systems*

. Professor Zomaya has delivered more than 100 keynote addresses, invited seminars, and media briefings and has been actively involved, in a variety of capacities, in the organization of more than 570 national and international conferences.

Professor Zomaya is a Fellow of the IEEE, a Fellow of the American Association for the

Advancement of Science, a Fellow of Institution of Engineering and Technology (U.K.), a

Distinguished Engineer of the ACM and a Chartered Engineer (CEng). He received the *1997*

*Edgeworth David Medal*

from the Royal Society of New South Wales for outstanding contributions to Australian Science.

He is also the recipient of the

*IEEE Computer Society's Meritorious Service Award and Golden Core Recognition*

in 2000 and 2006, respectively. His research interests are in the areas of algorithms, parallel and distributed computing and wireless networks.

---

Prof. Taweesak Koanantakool (to be updated)