

Special Session

Title of session:

Nature-inspired Algorithms for Service-Oriented Architectures and Cloud computing

Objectives and scope:

Service-oriented computing is a computing paradigm that utilizes services as the basic constructs to support the development of rapid, low-cost and easy composition of distributed applications even in heterogeneous environments. Cloud computing on the other hand is defined, as is a virtual environment where applications can be run and information can be stored and accessed from anywhere. Both service-oriented and cloud computing have interesting research challenges posed by the management of large and complex applications. A major requirement is the ability to maximize service performance at minimum cost subject to diverse goals and constraints. Therefore, advanced management approaches for reducing costs while maintaining high availability; scalability, elasticity, flexibility, reliability and efficiency are required. Research solutions are envisioned in the broad area of system management, including resource and application management for service providers and users, self-reconfiguration, adaptation approaches to react to changes, management processes and technologies, decision making, models for management, disaster recovery and backup, etc. The objective of this special session is to bring together researchers and practitioners to address the challenges posed by service-oriented and cloud computing systems to tackle optimization issues of systems and applications from different perspectives.

Topics of interest include but are not limited to:

Management of service-oriented or cloud-based systems require nature-inspired optimization approaches, including the following:

- Self-optimization components and services
- Optimization for performance, QoS
- Monitoring, modeling, estimation for optimization of management
- Optimization algorithms/models
- Hierarchical and decentralized optimization
- Predictive optimization
- System frameworks and architectures
- Application, platform, infrastructure management
- Storage systems
- Network management
- Job scheduling
- Capacity planning
- Energy management
- Service management
- Management processes and technologies

Session chairs:

Simone Ludwig and Ajith Abraham

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Ajith Abraham, Machine Intelligence Research Labs (MIR Labs), USA, ajith.abraham@ieee.org.

Brief biography of the session organizers:

Simone Ludwig works in the Department of Computer Science at North Dakota State University (NDSU) as Associate Professor since Fall 2010. Prior to joining NDSU, she worked at the University of Saskatchewan (Canada), Concordia University (Canada), Cardiff University (UK) and Brunel University (UK). She received her PhD degree and MSc degree with distinction from Brunel University (UK), in 2004 and 2000 respectively. Before starting her academic career she worked several years in the software industry. Her research interests include artificial intelligence, swarm intelligence, evolutionary computation, knowledge engineering, service-oriented computing, Cloud computing, and Grid computing.

Ajith Abraham received the Ph.D. degree in Computer Science from Monash University, Melbourne, Australia. He is currently the Director of Machine Intelligence Research Labs (MIR Labs), Scientific Network for Innovation and Research Excellence, USA, which has members from more than 90 countries. He has a worldwide academic and industrial experience of over 22 years. He works in a multi-disciplinary environment involving machine intelligence, network security, various aspects of networks, e-commerce, Web intelligence, Web services, computational grids, data mining, and their applications to various real-world problems. He has numerous publications / citations (h-index 43) and has also given more than 50 plenary lectures and conference tutorials in these areas. Since 2008, he is the Chair of IEEE Systems Man and Cybernetics Society Technical Committee on Soft Computing and a Distinguished Lecturer of IEEE Computer Society representing Europe (since 2011). Dr. Abraham is a Senior Member of the IEEE, the Institution of Engineering and Technology (UK) and the Institution of Engineers Australia (Australia), etc. He is the founder of several IEEE sponsored annual conferences, which are now annual events. More information at: <http://www.softcomputing.net>