



Title of special session:

Porting Bio and Health Informatics to the Cloud

Aim and objectives:

Leveraging the results of EU funded research, the Fi-Star project (www.fi-star.eu) is organising this workshop with the objective to bring together experts in the areas of Cloud Computing and Bio-informatics with the specific aim of showing how recent advances in Cloud technology can offer to the Bio-Informatics community standardized and certified software solutions taking advantage of all Cloud Computing benefits while guaranteeing protection of sensitive and personal data traveling in Public Clouds. This is a multidisciplinary research area in which engineering can have a significant impact.

Cloud computing services are hosted in large data centers. Typically, Cloud computing offer virtually unlimited computing resources to users and applications without requiring investments in resources that may never be optimally used. These services are referred to as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).

A cloud platform should enable processing without compromising on privacy constraints. The state-of-the-art approaches rely on encryption to protect sensitive information. An emerging approach resorts on a “reverse cloud” paradigm: Sending software to the data (rather than the other way around), following a Software as a Service (SaaS) approach, makes Cloud computing more safe, which is particularly important for the Health domain. Interoperability between applications and infrastructures need to be taken into account

The special session solicits work on requirements for porting use cases of the Health domain to the cloud while enabling end users to process sensitive personal data. While on-going research in Cloud computing is aiming at Cloud prototype development and architectures, this special session aims also at showing how recent results in cloud infrastructures are translated to the Bio-Informatics and Health domain.

The central topics this special session are (but not limited):

- Use cases in the Health Care domain building building-upon Future Internet Technology and the Cloud

- Specifications and Standards for porting Bio-Informatics Applications to the Cloud
- Architectures and services for porting Bio-Informatics to the Cloud following both a DaaS (Data as a Service) or a SaaS (Software as a Service) approaches.
- Interoperability between Bio-Informatics applications and cloud infrastructures
- Experience on testing, validation and Scalability of Cloud approaches in the Bio-Informatics

All accepted papers will be included in IEEE proceedings of the main conference.

Background: The proposers are part of Fi-Star Consortium. Fi-Star (www.rt3s.eu) is an EU-funded R&D project aiming at establishing early trials in the Health Care domain building on Future Internet (FI) technology leveraging on the outcomes of FI-PPP Phase 1 (<http://www.fi-ppp.eu>).

Short CV of the organizers:

Christoph Thuemmler is professor for e-Health and Director of the Centre for Applied E-Health at Edinburgh Napier University. He holds a PhD in Neurology on Cerebral Hemodynamics (Heidelberg University, Germany) and is a specialist in General Internal Medicine. Over the last 12 years he focused on research in the application of ICT in health-care, wellness and ambient assisted living (AAL). He has been a member of the IERC European Knowledge cluster and has been serving as rapporteur for E-Health on the IOT EU-China expert group. He has organized the E-Health session at FI week in Poznan in 2011 and has presented at the FI-Assembly in Aalborg in 2012. He has presented at IOT week in Venice and will chair the session on IOT in Healthcare at TOT 2012 in Wuxi. He has been an invited speaker to the FInES cluster meeting on 12th October 2012 in Brussels. Prof. Thuemmler is the Medical Director of the FI-STAR project.

Euripides G.M. Petrakis received Bachelor in Physics from the National University of Athens in 1986. He holds a Ph.D degree from the University of Crete, Department of Computer Science, since 1993. Between 1996 and 1998 he was a visiting researcher at the Dept. Computer Science of York University, Toronto, Canada and at GMD/IPSI Institute, Darmstadt, Germany. He joined the Technical University of Crete (TUC) on January 1998, where he is serving as full professor at the Computer Science division, and since 2006, as director of the Intelligent Systems Laboratory. Prof. Petrakis is involved in research on modern aspects of multimedia information systems, Web information systems, semantic Web and, recently, cloud computing. Prof. Petrakis has authored or co-authored over 70 papers in high quality journals and conferences. His work has received over 1500 citations from other investigators. He was awarded with an ERCIM fellowship in 1998. He is involved (as principal investigator) in several research projects funded by the Greek Government and the EU and attracted over 2Meuros funding. He was the Coordinator of the FP6-STREP project TOWL: "Time-determined ontology based information system for real time stock market analysis" (2006-2008).

Stelios Sotiriadis is a research associate in the Technical University of Crete (TUC), member of the Intelligent Systems Laboratory, and associate member of the Distributed and Intelligent Systems (DISYS) Research Centre of the University of Derby. Currently, he works for the Future Internet Social Technological Alignment Research (FI-STAR) European Project, which is an FI-PPP programme. His research interests are related with inter-clouds, high performance computing systems, grids, clouds and in general with large scale distributed infrastructures. Recently, he has involved with the area of future applications design, architectures of cloud platforms and porting healthcare applications into the cloud. He holds a PhD in the area of meta-scheduling in inter-clouds. He has won 2 best paper awards from IEEE conferences, has published over 45 papers in conference proceedings and international journals as well as he is program committee member and peer-reviewer of international conferences and journals.

Michael Zervakis holds a Ph.D degree from the University of Toronto, Department of Electrical Engineering, since 1990. He joined the Technical University of Crete on January 1995, where he is serving as Professor at the department of Electronic and Computer Engineering. He served as Associate Editor in the “IEEE Transactions on Signal Processing” from 1994 to 1996. He was an assistant professor with the University of Minnesota-Duluth, USA, from September 1990 to December 1994. Prof. Zervakis is the director of the Digital Image and Signal Processing Laboratory (DISPLAY) at the Technical University of Crete. is involved in research on modern aspects of signal processing, including estimation and constrained optimisation, multi-channel and multi-band signal processing, wavelet analysis for data, image processing and compression, neural networks and fuzzy logic with applications in biomedical data analysis, imaging systems and integrated automation systems.

Contact details of the organizers:

Professor Dr. Christoph Thuemmler, PhD
Director Centre for Digital Health Edinburgh Napier University
Merchiston Campus
Edinburgh EH10 5DT
United Kingdom
e-mail: C.Thuemmler@napier.ac.uk
Tel: (+44)7510 319678

Euripides G.M. Petrakis, Professor & Laboratory Director
Intelligent Systems Laboratory (Intelligence)
Dept. of Electronic & Computer Engineering
Technical University of Crete (TUC)
Chania, Crete, GR-73100, Greece
(+30)2821037229
e-mail: euripides@intelligence.tuc.gr
url: www.intelligence.tuc.gr/~petrakis

Dr. Stelios Sotiriadis, Research associate
Intelligent Systems Laboratory (InteLLigence)
Dept. of Electronic & Computer Engineering
Technical University of Crete (TUC)
Chania, Crete, GR-73100, Greece
(+30)2821037375
e-mail: s.sotiriadis@intelligence.tuc.gr

Michalis Zervakis, Professor & Laboratory Director
Digital Image and Signal Processing Laboratory
Dept. of Electronic & Computer Engineering
Technical University of Crete (TUC)
Chania, Crete, GR-73100, Greece
(+30)2821037206
e-mail: michalis@display.tuc.gr