

FAS*2014

including

P2P CAC

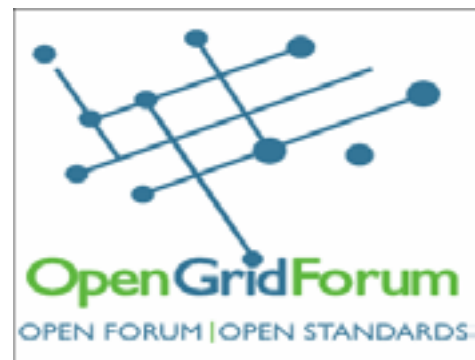
SASO OGF

Eighth IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2014)

International Conference on Cloud and Autonomic Computing (CAC 2014)

IEEE International Conference on Peer-to-Peer Computing (P2P 2014)

London, UK, 8-12 September 2014



IEEE

Imperial College
London



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FAS* 2014 - Programme Overview

Monday
8 Sept.

Tuesday
9 Sept.

Wednesday
10 Sept.

Thursday
11 Sept.

Friday
12 Sept.

FAS*: CAC, P2P & SASO Conferences; OGF

Workshops
EEE Building
Huxley Building

Welcome Address
Keynotes
SAF Building

Keynotes
SAF Building

Keynotes
SAF Building

Workshops
EEE Building
Huxley Building

Tutorials
SAF Building

Conference Sessions
CAC: Huxley Building
P2P: SAF Building
SASO: EEE Building
OGF: Huxley Building

OGF: Huxley
Building

FoCAS Science
Café

Welcome
Reception
Science Museum
London

Conference Dinner
Kia Oval

FAS* 2014 - Session Overview

	Monday 8 September		
	CAC2014	P2P'14	SASO2014
8.30am-5.00pm	Registration – Foyer, SAF Building		
9.30-11.00am	<p>Session 1</p> <ul style="list-style-type: none"> • FoCAS: 2nd Workshop on Fundamentals of Collective Adaptive Systems - Rm 509A, EEE • SISSY: Workshop on Self-Improving System Integration - Rm 509B, EEE • ACC: 1st International Workshop on Autonomic Cloud Cybersecurity - Rm 342, Huxley • T1: Complex Structures and Collective Dynamics in Networked Systems: Foundations for Self-Adaptation and Self-Organization (full day) - Rm 121, SAF 		
11.00-11.30am	Coffee Break, Foyer, SAF Building		
11.30-1.00pm	<p>Session 2</p> <ul style="list-style-type: none"> • FoCAS: 2nd Workshop on Fundamentals of Collective Adaptive Systems - Rm 509A, EEE • SISSY: Workshop on Self-Improving System Integration - Rm 509B, EEE • ACC: 1st International Workshop on Autonomic Cloud Cybersecurity - Rm 342, Huxley • T1: Complex Structures and Collective Dynamics in Networked Systems: Foundations for Self-Adaptation and Self-Organization (full day) - Rm 121, SAF 		
1.00-2.00pm	Lunch Break, [Campus Outlets]		
2.00-3.30pm	<p>Session 3</p> <ul style="list-style-type: none"> • FoCAS: 2nd Workshop on Fundamentals of Collective Adaptive Systems - Rm 509A, EEE • SISSY: Workshop on Self-Improving System Integration - Rm 509B, EEE • ACC: 1st International Workshop on Autonomic Cloud Cybersecurity - Rm 342, Huxley • T1: Complex Structures and Collective Dynamics in Networked Systems: Foundations for Self-Adaptation and Self-Organization (full day) - Rm 121, SAF • T2: Predictable Self-Organization with Computational Fields (half day, pm) - Rm 122, SAF 		

	Tuesday 9 September		
	CAC2014	P2P'14	SASO2014
8.30am-5.00pm	Registration – Foyer, SAF Building		
9.00-9.30am	Welcome Address - LT G16, SAF Building		
9.30-10.30am	Keynote 1 Morris Riedel , Juelich Supercomputing Centre / University of Iceland: Scientific Big Data Analytics – Practice and Experience LT G16, SAF Building		
10.30-11.00am	Coffee Break: Concourse Lvl 3, Huxley Concourse Lvl 1, SAF Rm 403A/B, EEE		
11.00-1.00pm	Session I – Fault Tolerance LT 311, Huxley Building	Session I: Streaming LT G16, SAF Building	Paper session 1: Resource Allocation 1 LT 408, EEE Building
1.00-2.00pm	Lunch Break, [Campus Outlets]		
2.00-3.00pm	Keynote 2 Christian Scheideler , University of Paderborn: Towards a rigorous base for the design of P2P systems LT G16, SAF Building		
3.00-3.30pm	Tea Break: Concourse Lvl 3, Huxley Concourse Lvl 1, SAF Rm 403A/B, EEE		
3.30-5.30pm	Session II – Scientific Applications and Programming Models LT 311, Huxley Building	Session II: Overlays and Relatives & Clouds LT G16, SAF Building 3.30-5.45pm	Paper session 2: Networks LT 408, EEE Building

5.30-7.00pm	Demonstration and Poster Session Rm 341 & Rm 342, Huxley		SASO Steering Committee meeting Rm 503, EEE Building
7.00-10.00pm	Welcome Reception Science Museum London, Exhibition Road (Making the Modern World, Ground Floor)		

	Wednesday 10 September		
	CAC2014	P2P'14	SASO2014
8.30am-5.00pm	Registration – Foyer, SAF Building		
9.30-10.30am	Keynote 3 Maarten van Steen , University of Amsterdam: Adaptive Collective Systems (A perspective from a computer-systems researcher) LT G16, SAF Building		
10.30-11.00am	Coffee Break: Concourse Lvl 3, Huxley Concourse Lvl 1, SAF Rm 403A/B, EEE		
11.00-1.00pm	Session III – Resource Management LT 311, Huxley Building	Session III: Good Neighbors LT G16, SAF Building	Paper session 3: Assurance, Security & Anomaly Detection LT 408, EEE Building
1.00-2.00pm	Lunch Break, [Campus Outlets]		
2.00-3.00pm	Keynote 4 Natasa Milic-Frayling , Microsoft Research Cambridge: Personal Computing in the Contemporary Digital Ecosystem LT G16, SAF Building		
3.00-3.30pm	Tea Break: Concourse Lvl 3, Huxley Concourse Lvl 1, SAF Rm 403A/B, EEE		
3.30-5.30pm	Session IV – Resource and Application Management LT 311, Huxley Building	Poster and Demo Session Rm 403A/B, EEE Building Rm 509A/B, EEE Building	
5.30-6.00pm			

7.00-11.00pm

Conference Dinner

Kia Oval, Kennington, London SE11 5SS (Terrace, 4th Floor; followed by England Suite, 2nd Floor)

	Thursday 11 September		
	CAC2014	P2P'14	SASO2014
8.30am-5.00pm	Registration – Foyer, SAF Building		
9.30-10.30am	Keynote 5 Manish Parashar , Rutgers University: Autonomics, Cyberinfrastructure Federation, and Software-Defined Environments for Science LT G16, SAF Building		
10.30-11.00am	Coffee Break: Concourse Lvl 3, Huxley Concourse Lvl 1, SAF Rm 403A/B, EEE		
11.00-1.00pm	Session V – Big Data and Storage LT 311, Huxley Building	Session IV: Storage and Replication & Privacy LT G16, SAF Building	Paper session 4: Mobility LT 408, EEE Building Short Paper session LT 408, EEE Building
1.00-2.00pm	Lunch Break, [Campus Outlets]		
2.00-3.00pm	Keynote 6 Andrzej Nowak , University of Warsaw and Florida Atlantic University: Self of Societies LT G16, SAF Building		
3.00-3.30pm	Tea Break: Concourse Lvl 3, Huxley Concourse Lvl 1, SAF Rm 403A/B, EEE		
3.30-4.30pm	Session VI – Recommendation and Security LT 311, Huxley Building Panel: Programming Paradigms for Big Data Analytics on the Cloud	Panel Session LT 408, EEE Building	
4.30-5.00pm		Session V: Clouds (Short) & Measurements (Short) LT G16, SAF Building	Paper session 5: Resource Allocation II LT 408, EEE Building
5.00-5.30pm			
5.30-6.00pm			Conference Close LT 408, EEE Building

	Friday 12 September		
	CAC2014	P2P'14	SASO2014
8.30am-5.00pm	Registration – Foyer, SAF Building		
9.30-11.00am	<p>Session 1</p> <ul style="list-style-type: none"> • QA4SASO: Quality Assurance for Self-adaptive, Self-organising Systems - Rm 509A, EEE • SASO^ST: 2nd Workshop on Self-Adaptive and Self-Organising Socio-Technical Systems - Rm 509B, EEE • AMGCC': 2nd International Workshop on Autonomic Management of Grid and Cloud Computing - Rm 342, Huxley 		
11.00-11.30am	Coffee Break: Concourse Lvl 3, Huxley - Rm 509A/B, EEE		
11.30-1.00pm	<p>Session 2</p> <ul style="list-style-type: none"> • QA4SASO: Quality Assurance for Self-adaptive, Self-organising Systems - Rm 509A, EEE • SASO^ST: 2nd Workshop on Self-Adaptive and Self-Organising Socio-Technical Systems - Rm 509B, EEE • AMGCC': 2nd International Workshop on Autonomic Management of Grid and Cloud Computing - Rm 342, Huxley 		
1.00-2.00pm	Lunch Break, [Campus Outlets]		
2.00-3.30pm	<p>Session 3</p> <ul style="list-style-type: none"> • QA4SASO: Quality Assurance for Self-adaptive, Self-organising Systems - Rm 509A, EEE • SASO^ST: 2nd Workshop on Self-Adaptive and Self-Organising Socio-Technical Systems - Rm 509B, EEE • AMGCC': 2nd International Workshop on Autonomic Management of Grid and Cloud Computing - Rm 342, Huxley 		
3.30-4.00pm	Tea Break: Concourse Lvl 3, Huxley - Rm 509A/B, EEE		
3.30-4.00pm	<p>Session 4</p> <ul style="list-style-type: none"> • QA4SASO: Quality Assurance for Self-adaptive, Self-organising Systems - Rm 509A, EEE • SASO^ST: 2nd Workshop on Self-Adaptive and Self-Organising Socio-Technical Systems - Rm 509B, EEE • AMGCC': 2nd International Workshop on Autonomic Management of Grid and Cloud Computing - Rm 342, Huxley 		

Keynotes

Keynote 1

Morris Riedel

Federated Systems and Data Division, Juelich Supercomputing Centre
School of Engineering and Natural Sciences, University of Iceland

Tuesday 9th September, 9.30-10.30

LTG16, SAF Building

Title: Scientific Big Data Analytics – Practice and Experience

Abstract: Data transfer, storage management, sharing, curation and most notably data analysis of often geographically dispersed large quantities of data of experiments, observations, or computational simulations become ever more important for science, research, industry and governments. Scientists and engineers that analyse these massive datasets require therefore reliable infrastructures as well as scalable tools in order to perform ‘scientific big data analytics (SBDA)’. This keynote will take stock of selected scientific and engineering use cases that take advantage of parallel machine learning algorithms (e.g. classification, clustering, regression) in combination with established statistical data mining methods in the light of new challenges faced with ‘big data’. It will critically review practice and experience of selected community approaches and thus address several important questions: Is big data always better data for analytics? Are big data analytics frameworks really providing the functionality they promise or scientists require? How can the scientific big data analytics process be properly structured? What is the role of the Research Data Alliance and Open Grid Forum in this context? Do we need a peer-review process for steering the scientific big data analytics applications and evolution when using valuable storage and compute resources?

Bio: Dr. - Ing. Morris Riedel is an Adjunct Associate Professor at the School of Engineering and Natural Sciences of the University of Iceland. He received his PhD from the Karlsruhe Institute of Technology (KIT) and started the work in parallel and distributed systems in the field of scientific visualization and computational steering of e-science applications on large-scale HPC resources. He previously held various positions at the Juelich Supercomputing Centre in Germany. At this institute, he is the head of a scientific research group focussed on ‘High Productivity Data Processing’ as part of the Federated Systems and Data Division. Lectures given in universities such as the University of Iceland, University of Applied Sciences of Cologne and University of Technology Aachen (RWTH Aachen) include ‘High Performance Computing & Big Data’, ‘Statistical Data Mining’, ‘Handling of large datasets’ and ‘Scientific and Grid computing’. His current research focusses on ‘high productivity processing of big data’ in the context of scientific computing applications. He is currently a co-chair of the ‘big data analytics interest group’ of the Research Data Alliance (RDA) and contributes to the Open Grid Forum (OGF) in selected areas.

Keynote 2

Christian Scheideler

Dept. of Computer Science, University of Paderborn

Tuesday 9th September, 14.00-15.00

LTG16, SAF Building

Title: Towards a rigorous base for the design of P2P systems

Abstract: Many P2P systems have already been proposed in the literature, but only very few of them are truly self-organizing in a sense that they can recover from any state. While certain degenerate states might be very rare, and may require major attacks to occur, it would nevertheless be much safer to use these systems if we knew that they would be able to recover from any bad event without human intervention. In theory, a system that can recover from any initial state is called self-stabilizing. While many self-stabilizing algorithms have already been proposed for static distributed systems, not many constructions for self-stabilizing dynamic distributed systems are known. In my presentation, I will present a rigorous base for the design of such systems which is based on our insights that we have gained from our various self-stabilizing constructions for P2P systems.

Bio: Christian Scheideler received his M.S. and Ph.D. degrees in computer science from the University of Paderborn, Germany, in 1993 and 1996. He is currently the department chair of the Dept. of Computer Science, University of Paderborn. Before he joined the University of Paderborn as a full professor in 2009, he was, among other activities, a postdoc at the Weizmann Institute, Israel, for a year, an assistant professor at the Johns Hopkins University, USA, for five years, and an associate professor at the Technical University of Munich, Germany, for three and a half years. He is (co)author of more than 100 publications in refereed conferences and journals and has served on more than 50 conference committees. His main focus is on distributed algorithms and data structures, network theory (in particular, peer-to-peer systems and mobile ad-hoc networks), and the design of algorithms and architectures for self-organizing and robust distributed systems.

Keynote 3

Maarten van Steen

Department of Computer Science, VU University Amsterdam

Wednesday 10th September, 9.30-10.30

LTG16, SAF Building

Title: Adaptive Collective Systems (A perspective from a computer-systems researcher)

Abstract: The field of computer science is rapidly changing, and we often barely seem to notice it. For years we have been working on the same topics, and many of us expect to continue do so for still a long time. About a year ago, I joined a team of experts on computational intelligence in an attempt to write a booklet on adaptive collective systems. It taught me a lot on how colleagues in the same field were looking at what's important in Computer Science. In this talk, I will reflect on what we achieved during that week. In particular, I will focus on such systems from the perspective of my own sub-field, namely large-scale distributed computer systems. There are lessons to be learned by all in computer science if we truly want to move the field forward or, at the least, keep in pace with the changes enforced upon us.

Bio: Maarten van Steen is professor of large-scale distributed systems at VU University Amsterdam and chair of its Department of Computer Science. Since several years, a large part of his research is concentrated on understanding very large networked systems of small, wireless devices such as massive sensor networks. Next to such extreme distributed systems, his interests also reach out to complex-network science and understanding the behaviour that emerges from very large networked systems. He finds running a large department to be much easier than understanding emergent behaviour in computer systems.

Keynote 4

Natasa Milic-Frayling

Principal Researcher, Microsoft Research
Cambridge

Wednesday 10th September, 14.00-15.00

LTG16, SAF Building

Title: Personal Computing in the Contemporary Digital Ecosystem

Abstract: The digital revolution has transformed all aspects of our lives. It has been initially spurred by the pervasive use of personal computers (PCs) and spread through the rapid adoption of mobile devices, online services, and social media. New technologies continue to impact our everyday practices and reshape the notion of personal computing. Here we discuss several aspects that require attention and provide opportunities for innovation.

We observe that the users' digital assets are dispersed across applications and services, with more or less control over content access and reuse. Among them are 'traditional' digital artefacts such as documents, presentations, photos, and videos that invoke a strong analogy with similar artefacts that we manage in the physical world. Considering the complex nature of digital media, the question is whether we can achieve a comparable level of confidence in managing personal digital assets throughout our life time.

Furthermore, in physical environments the users acquire skills and have the means of taking initiatives and asserting control over devices and services. Most of the digital systems provide restricted ways of directing computation by the end users; primarily through UI menus and pre-defined functions. In many instances the UI hides the system complexity and that inadvertently causes the

lack of transparency and understanding on the part of the users. As a consequence, the users are unable to make informed decisions and assume control.

In this presentation we discuss the technical and conceptual aspects of the information systems required to support lifelong personal computing. Based on the insights from the user studies, we explore the opportunities for supporting the users to become an empowered participant of the digital ecosystem.

Bio: Natasa Milic-Frayling is a Principal Researcher at Microsoft Research Cambridge. She sets research directions for the Integrated Systems group, an inter-disciplinary team focused on the design, prototyping and evaluation of information management and communication systems. Her research covers a spectrum of issues from sharing and making sense of information in collaborative settings, to analysing social media networks and devising trustworthy online services. Natasa is a leading expert in the area of digital preservation. She is actively involved with the Open PLANETS Foundation and the EU SCAPE initiative on scalable cloud-based services for long term access to digital content. She is equally passionate about innovation in personal and social computing and promotes a dialogue between IT industry, consumers, and policy makers on the issues that arise from the novel usage of technology. During her tenure at Microsoft Research, Natasa served as Director of Research Partnership, promoting collaboration between MS Research and industry. She is actively involved with a wider community of academics and practitioners through public speaking and research collaborations.

Keynote 5

Manish Parashar

Department of Computer Science, Rutgers,
The State University of New Jersey

Thursday 11th September, 9.30-10.30

LTG16, SAF Building

Title: Autonomics, Cyberinfrastructure Federation, and Software-Defined Environments for Science

Abstract: Software-defined platforms, such as those enabled by Cloud services, provide new levels of flexibility that combined with autonomic capabilities can lead to very dynamic infrastructures that can adapt themselves to application and user needs. Such platforms can enable new formulations in science and engineering by opportunistically leveraging heterogeneous and loosely connected data and computing resources. In this talk I will explore how elastic software-defined execution based on autonomic federation of resources and management of applications can support such dynamic and data-driven workflows. I will also explore how such abstractions can potentially lead to new paradigms and practices in science and engineering. This talk is based on research that is part of the CometCloud project at the NSF Cloud and Autonomic Computing Center at Rutgers and at the Rutgers Discovery Informatics Institute.

Bio: Manish Parashar is Professor of Computer Science at Rutgers University. He is also the founding Director of the Rutgers Discovery Informatics Institute (RDI2) and site Co-Director of the NSF Cloud and Autonomic Computing Center (CAC). His research interests are in the broad areas of Parallel and Distributed Computing and Computational and Data-Enabled Science and Engineering. Manish serves on the editorial boards and organizing committees of a large number of journals and international conferences and workshops, and has deployed several software systems that are widely used. He has also received a number of awards and is Fellow of AAAS, Fellow of IEEE/IEEE Computer Society and Senior Member of ACM. For more information please visit <http://parashar.rutgers.edu/>.

Keynote 6

Andrzej Nowak

University of Warsaw and Florida Atlantic University

Thursday 11th September, 14.00-15.00

LTG16, SAF Building

Title: Self of Societies

Abstract: Understanding how self-structure functions in humans informs us how to enhance self-organizing function of social systems. The creation of Self-structure was arguably one of the most important steps in the evolution of human species. The existence of self changes in a fundamental way how humans can regulate their behavior. The self provides individuals with a sense of purpose and identity. Self is a cognitive and affective representation of an individual as an object. It allows individuals to include a model of oneself along cognitive representations of other people while anticipating the likely course of events. Relating the anticipated consequences of actions to goals and values provides the capacity for decision mechanisms to function in a purposeful way. The Self-structure enables taking into account consequences of own actions for relations with others, and thus allows one to avoid actions that could damage the relations with others. The existence of the Self-structure enabled humans to create complex social structures and individuals to navigate in these structures. The Self also monitors all the incoming information screening it for self-relevance, detecting possible threats and opportunities. In sum the self serves to prevent personal crisis and to capitalize on opportunities.

The Self is the main structure regulating functions of other psychological structures, as well as thoughts, feelings and behavior. It integrates the functioning of other psychological structures, introduces coherence in their functioning in service of achieving goals and realizing values. It resolves conflict between incompatible demands, motives, requirements, functions and goals. It

also serves as a link between the individual and the society providing mechanisms by which social norms control behavior.

Societies at present do not have the sense of Self that functions in a comparable way to how the Self functions at the individual level. There is, of course, an abundance of information relevant to functioning of almost every aspect of societies. This information is not, however, systematically evaluated and integrated what limits its usefulness for regulation. Also, in societies, there are no systematic tools that could mimic anticipatory functions of the self. Current developments in ICT make it possible to introduce in societies functions that by mimicking the role of the Self-structure enhance processes of self-organization in social groups and societies. It will enable self-organizing bottom-up social processes in societies to perform purposeful action by societies in service of goal achievement and realization of its values, avoiding crisis and facilitating sustained growth.

Bio: Andrzej Nowak is a professor of psychology at the Department of Psychology, University of Warsaw, where he directs the Center for Complex Systems at the Institute for Social Studies, and also Professor of Psychology, Florida Atlantic University. His primary focus is on complexity approach in the social area. He has done research concerning social influence, social transitions, social dilemmas, self and emotions. He specializes in computer simulations of social processes. His current research includes social influence, social coordination, and simulation of real social systems, dynamics of conflict, social mechanisms of economic dynamics. He also works on modeling the dynamics of the self-structure. He publishes in social and psychological journals (e.g. Psychological Review), physical journals (Physical review Letters, Physical Review A., E) computer science journals (e.g. IEEE: Intelligent Systems) and interdisciplinary journals (eg. PlosOne). He has authored or edited 15 books and over 120 paper and chapters.

OGF - Schedule and Events

	Monday 8 Sept.	Tuesday 9 Sept.	Wednesday 10 Sept.	Thursday 11 Sept.	Friday 12 Sept.
8.30am-5.00pm	Registration – Foyer, SAF Building				
9.00-9.30am					
9.30-10.30am		CAC 2014 Keynote 1	DRMAA / OCCI (I) Rm 341, Huxley	JSDL WG Rm 341, Huxley	FedSec CG Rm 341, Huxley
11.00-12.30pm		DRMAA Code Camp Rm 341, Huxley	DRMAA / OCCI (II) Rm 341, Huxley	BES WG Rm 341, Huxley	CAOPS WG Rm 341, Huxley
1.30-3.00pm		DRMAA OCII (I) - (I) General Rm 341, Rm 342, Huxley Huxley	BoF: “Use of Cloud and Container Tech- nologies in Grids” Rm 341, Huxley	DFDL Tutorial and Demo I Rm 341, Huxley	VOMSPROC WG Rm 341, Huxley
3.30-4.00pm		DRMAA OCII (II) - (II) - Draft 1.2 Tutorial Rm 342, Rm 341, Huxley Huxley	OGF Town Hall Rm. 341, Huxley 3:30 - 5:00pm	DFDL Tutorial and Demo II Rm 341, Huxley	IDEL WG Rm 341, Huxley
4.00-5.00pm	GFSG F2F (Steering Committee only) - To 5.30pm				



SASO Workshops

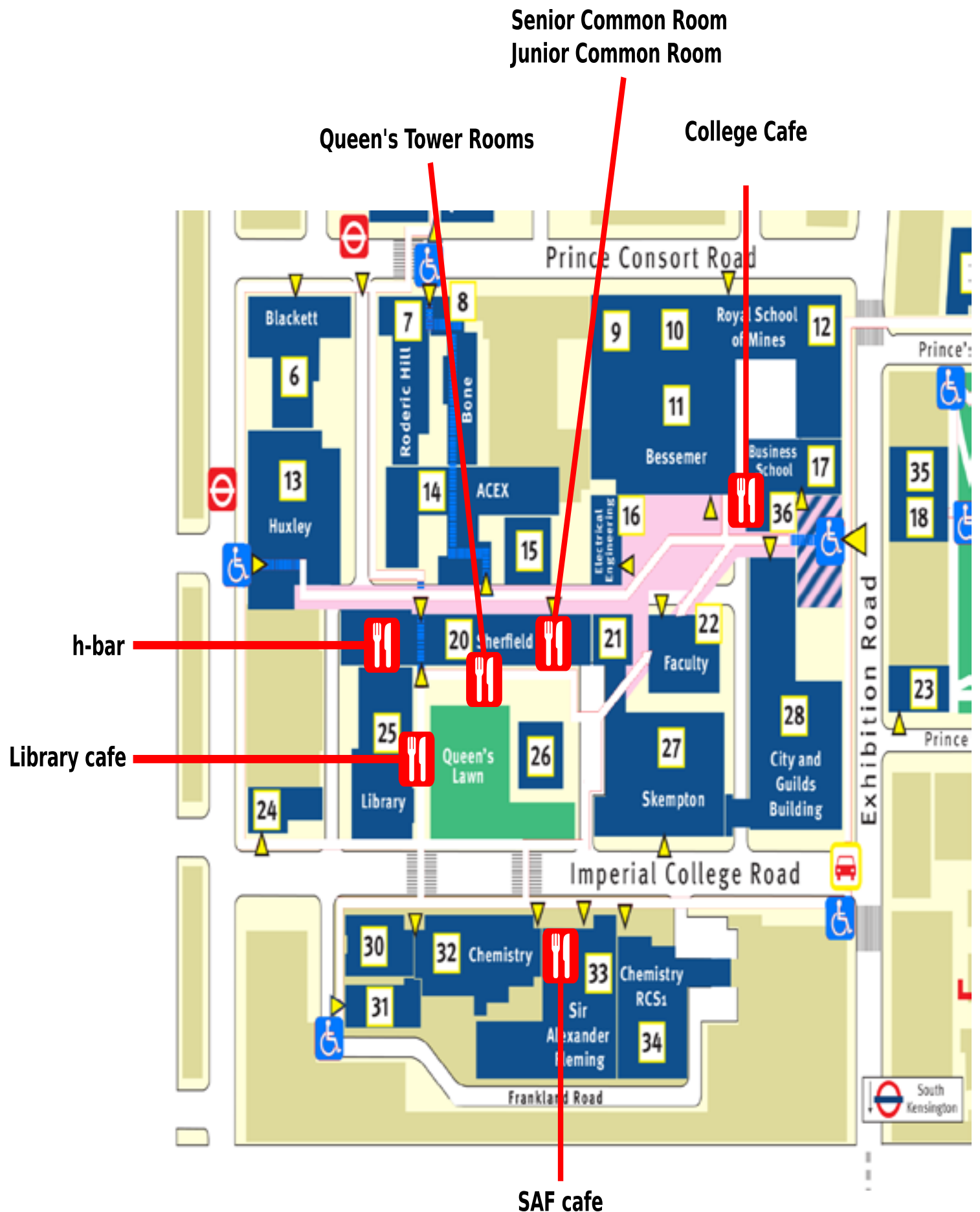


CAC Workshops



Registration
Welcome
Keynotes
Tutorials

Lunch Outlet Locations



Social Events

The Welcome Reception will be held in the Science Museum from 19.00-22.00 on Tuesday 9th September.

The Science Museum is adjacent to Imperial College, on the Exhibition Road.



The event will be held in the ‘Making the Modern World’ Gallery. This gallery “displays a series of exceptional objects which mark new departures in technology and science – the events that have framed our world”.



The Conference Dinner will be held at the Kia Oval from 19.00-20.00 on Wednesday 10th September.

The Kia Oval is home to Surrey County Cricket Club, since 1845.

The ground is a short tube ride from Imperial College.

Take the District or Circle Line Eastbound from South Kensington.

Change to the Victoria Line at Victoria.

Take the Victoria Line Southbound to Vauxhall.

The Kia Oval is a short walk from there.



Follow Exit 3 at Vauxhall

Turn right and go under the railway bridge



Bear right at the junction

SASO Conference

Welcome

The 2014 edition of the SASO conference series will be held in London, United Kingdom, and hosted by Imperial College London, in the week of September 8-12, 2014.

The aim of the Self-Adaptive and Self-Organizing systems conference series (SASO) is to provide a forum for the foundations of a principled approach to engineering systems, networks and services based on self-adaptation and self-organization. The complexity of current and emerging networks, software and services, especially in dealing with dynamics in the environment and problem domain, has led the software engineering, distributed systems and management communities to look for inspiration in diverse fields (e.g., complex systems, control theory, artificial intelligence, sociology, and biology) to find new ways of designing and managing such computing systems. In this endeavor, self-organization and self-adaptation have emerged as two promising interrelated approaches. Many significant research problems exist related to self-adaptive or self-organizing systems. A challenge in self-adaptation is often to identify how to change specific behavior to achieve the desired improvement. Another major challenge is to predict and control the global system behavior resulting from self-organization. Yet more challenges arise from the confluence of self-adaptation with self-organization. For instance, how do self-* mechanisms that work well independently operate in combination? How are meso-level structures formed which leverage micro-level behavior to achieve desirable macro-level outcomes, and avoid undesirable ones?

The eighth edition of the SASO conference embraces the inter-disciplinarity and the scientific, empirical and application dimensions of self-* systems; it thus aims to attract participants with different backgrounds, to foster cross-pollination between research fields, and to expose and discuss innovative theories, design principles, frameworks, methodologies, tools, and applications.

Topics

The topics of interest to SASO include, but are not limited to:

Self-* systems theory: theoretical frameworks and models; biologically- and socially-inspired paradigms; inter-operation of self-* mechanisms;

Self-* systems engineering: reusable mechanisms, design patterns, architectures, methodologies; software and middleware development frameworks and methods, platforms and toolkits; hardware; self-* materials;

Self-* system properties: robustness, resilience and stability; emergence; computational awareness and self-awareness; reflection;

Self-* cyber-physical and socio-technical systems: human factors and visualization; self-* social computers; crowdsourcing and collective awareness;

Applications and experiences of self-* systems: cyber security, transportation, computational sustainability, big data and creative commons, power systems.



Paper Details

Paper Session 1

Resource Allocation I

Tuesday 9th September, 11.00-13.00

LT 408, EEE Building

Chair: Simon Dobson, St Andrews University, UK

- **The Value of Fairness: Trade-offs in Repeated Dynamic Resource Allocation.** *Thomas Kohler, Jan-Philipp Steghöfer, Dídac Busquets and Jeremy Pitt.*
- **A Hybrid Cross-Entropy Cognitive-based Algorithm for Resource Allocation in Cloud Environments.** *Gaetano Anastasi, Pietro Cassarà, Patrizio Dazzi, Alberto Gotta, Matteo Mordacchini and Andrea Passarella.*
- **Proactive Guidance for Dynamic and Cooperative Resource Allocation under Uncertainties.** *Gerrit Anders, Florian Siefert, Michael Mair and Wolfgang Reif.*
- **Topological aspects of greedy self-organization problems.** *Furqan Ahmed and Olav Tirkkonen.*

Paper session 2

Networks

Tuesday 9th September, 15.30-17.30

LT 408, EEE Building

Chair: Markus Esch, Fraunhofer Institute for Communication, Germany

- **Artificial Immune System driven evolution in Swarm Chemistry.** *Nicola Capodici, Emma Hart and Giacomo Cabri.*
- **Growing Self-organized Design of Efficient and Robust Complex Networks.** *Yukio Hayashi.*
- **Towards Decentralised Detection of Emergence in Complex Adaptive Systems.** *Eamonn O'Toole, Vivek Nallur and Siobhan Clarke.*
- **Self-Governance by Transfiguration: from Learning to Prescription Changes.** *Regis Riveret, Erivelton Nepomuceno, Alexander Artikis and Jeremy Pitt.*

Paper session 3

Assurance, Security & Anomaly Detection
Wednesday 10th September, 11.00-13.00
LT 408, EEE Building

Chair: Ozalp Babaoglu, University of Bologna, Italy

- **A graph analysis approach to detect attacks in Trusted Desktop Grids at runtime.** *Jan Kantert, Hannes Scharf, Sarah Edenhofer, Sven Tomforde, Jörg Hähner and Christian Müller-Schloer.*
- **Sybil-Resistant Meta Strategies for Forwarder's Dilemma.** *Yunus Durmus, Andreas Loukas, Ertan Onur and Koen Langendoen.*
- **Estimating p-values for deviation detection.** *Thorsteinn Rögnvaldsson, Henrik Norrman, Stefan Byttner and Eric Järpe.*
- **Providing Assurances for Self-Adaptation in a Mobile Digital Storytelling Application Using ActivFORMS.** *Stepan Shevtsov, Danny Weyns and Sabri Pllana.*

Paper session 4

Mobility
Thursday 11th September, 11.00-13.00
LT 408, EEE Building

Chair: Jacob Beal, BBN Technologies, USA

- **Using Heading to Improve Mobile Agent Movement on Irregular Networks.** *Bryan Prosser, Errin Fulp, David McKinnon and Glenn Fink.*
- **Self-Adaptive probabilistic roadmap generation for intelligent virtual agents.** *Katrina Samperi McIvor, Peter Lewis and Nelly Bencomo.*

Short Paper session

Thursday 11th September, 11.00-13.00
(cont. from Paper Session 4)
LT 408, EEE Building

Chair: Ingo Scholtes, ETH Zurich, Switzerland

- **Destabilising Conventions: Characterising the Cost.** *James Marchant, Nathan Griffiths, Matthew Leeke.*
- **Social Capital as a Complexity Reduction Mechanism for Decision Making in Large Scale Open Systems.** *Patricio E. Petruzzi, Dídac Busquets, Jeremy Pitt.*
- **Collective Adaptation in Process-Based Systems.** *Antonio Bucchiarone, Claudio Antares Mezzina, Marco Pistore, Heorhi Raik, Giuseppe Valetto.*

Paper session 5

Resource Allocation II
Thursday 11th September, 16.30 – 17.30
LT 408, EEE Building

Chair: Peter Lewis, Aston University, United Kingdom

- **Runtime Vertical Scaling of Virtualized Applications via Online Model Estimation.** *Simon Spinner, Samuel Kounev, Xiaoyun Zhu, Lei Lu, Mustafa Uysal and Anne Holler.*
- **Prosumers as aggregators in the DEZENT context of regenerative power production.** *Ugo Montanari and Alain Tcheukam Siwe.*

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CAC Conference

Overview

Enterprise-scale cloud platforms and services systems, present common and cross-cutting challenges in maximizing power efficiency and performance while maintaining predictable and reliable behavior, and at the same time responding appropriately to environmental and system changes such as hardware failures and varying workloads. Autonomic computing systems address the challenges in managing these environments by integrating monitoring, decision-processing and actuation capabilities to autonomously manage resources and applications from high-level policies.

Research in cloud and autonomic computing spans a variety of areas, from computer systems, architecture, middleware services, databases and data-stores, and networks to machine learning and control theory. The purpose of the 2nd International Conference on Cloud and Autonomic Computing (CAC) is to bring together researchers and practitioners across these disciplines to address the multiple facets of self-management in computing systems and applications.

Papers are solicited on a broad array of topics of relevance to cloud and autonomic computing and their intersections, and particularly those that bear on connections and relationships among different research areas or report on prototype systems or experiences. The goal is establish a premier international forum focused on the latest research, applications, and technologies aimed at making cloud and autonomic computing systems and services easy to design, to deploy and to implement, while achieving the simultaneous goals to be self-manageable, self-regulating and scalable with little involvement of human or system administrators.



Special Tracks

The 2014 CAC conference will be organized around 3 crosscutting themes: (1) Clouds and Autonomic Computing: NaaS/IaaS - Network and Infrastructure; (2) Clouds and Autonomic Computing: PaaS, Middleware, Tools, Security and Privacy; and (3) Clouds and Autonomic Computing: SaaS- Applications and Performance. Topics of interest include, but are not limited to:

- Autonomic Cloud Computing:
 - Self-management cloud services
 - Autonomic cloud applications and services
 - Autonomic virtual cloud resources and services
 - Cloud workload characterization and prediction
 - Monitoring and analysis of behavior of cloud resources and services
 - Theoretical frameworks for modeling and analysis autonomic computing systems and services
- Autonomics for Extreme Scales:
 - Large scale autonomic systems
 - Self-optimizing and self-healing at petacomputing scale
 - Self-managing middleware and tools for extreme scales
 - Experiences in autonomic systems and applications at extreme scales (peta/ exa-computing)
- Autonomic Cloud Cybersecurity:
 - Self-protection techniques of computing systems, networks and applications
 - Metrics to evaluate and performance of self-protection algorithms
 - Anomaly behavior analysis of autonomic systems and services
 - Data mining, stochastic analysis and prediction of autonomic systems and applications
 - Metrics to characterize and quantify the cybersecurity algorithms (confidentiality, integrity, and availability of autonomic systems)
 - Datasets and benchmarks to compare and evaluate different self-protection techniques
- Autonomic Tools and Applications:
 - Benchmarks and tools to evaluate and compare different architectures to implement autonomic cloud systems
 - High performance autonomic applications
 - Self* applications in science and engineering
 - Self* Human Machine Interface
 - Full visibility into the behavior of autonomic systems and services
 - Knowledge representation and visualization of behavior of autonomic systems and services

Session Details

Session I

Fault Tolerance

Tuesday 9th September, 11.00-13.00

LT 311, Huxley Building

Presentations:

- **CUDSwap: Tolerating Memory Exhaustion Failures in Cloud Computing**, *Shivakant Mishra, and Jose Antonio Navas Molina, University of Colorado at Boulder, US.*
- **Sequential Fault Monitoring**, *Cecile Germain, and Dawei Feng, Universite Paris Sud, France.*
- **Towards Reliability and Performance Prediction of Autonomic Systems with Self-Healing and Protection**, *Nabila Salmi, Mehdi Sliem, and Malika Loualalen, University of Science and Technology Houari Boumediene (USTHB), Algeria.*
- **Autonomic Resilient Cloud Management (ARCM): Design and Evaluation**, *Farah Fargo, Salim Hariri, Youssif Al-Nashif, and Cihan Tunc, University of Arizona, US.*
- **A Look at Adaptability for Service Workflows**, *Onyeka Ezenwoye, and Masoud Sadjadi, Georgia Regents University, US.*

Session II

Scientific Applications and Programming Models

Tuesday 9th September, 15.30-17.30

LT 311, Huxley Building

Presentations:

- **Optimization Patterns for the Orchestration of Parameter-Sweep Workflows**, *Selim Kalayci, and S. Masoud Sadjadi, East Tennessee State University, US.*
- **A Framework for Managing Continuous Query Evaluations over Voluminous, Multidimensional Datasets**, *Sangmi Pallikara, Mathew Malensek, and Cameron D. Toloee, Colorado State University, US.*
- **A Middleware for Managing Non-Functional Requirements in Cloud PaaS**, *Alexander Pokahr, Lars Braubach, and Kai Jander, University of Hamburg, Germany.*
- **Invited talk: Self-adaptive Resilient Service Composition**, *Mario Henrique Cruz Torres and Tom Holvoet.*

Session III

Resource Management

Wednesday 10th September, 11.00-13.00

LT 311, Huxley Building

Presentations:

- **Autonomic Management of Cloud Resources and Services Framework**, *Farah Fargo, Salim Hariri, Youssif Al-Nashif, and Cihan Tunc, University of Arizona, US.*
- **A Synchronization Mechanism for Cloud Accounting Systems**, *Ewnetu Bayuh Lakew, Francisco Hernandez-Rodriguez, Lei Xu, and Erik Elmroth, Umeå University, Sweden.*
- **Modelling and Analysis of Migration Policies for Autonomic Management of Energy Consumption in Cloud via Petri-nets**, *Marwah Alansari, and Behzad Bordbar, University of Birmingham, UK.*
- **Autonomic Resource Allocation for Cloud Data Centers: A Peer to Peer Approach**, *Mina Sedaghat, Francisco Hernandez-Rodriguez, and Erik Elmroth, Umea University, Sweden.*

Session IV

Resource and Application Management

Wednesday 10th September, 15.30-18.00

LT 311, Huxley Building

Presentations:

- **The Straw that Broke the Camel's Back: Safe Cloud Overbooking with Application Brownout**, *Luis Tomás, Cristian Klein, Johan Tordsson, and Francisco Hernandez-Rodriguez, Umeå universitet, Sweden.*
- **Autonomic Allocation of Communicating Virtual Machines in Hierarchical Cloud Data Centers**, *Arwa Aldhalaan, and Daniel Menasce, George Mason University, US.*
- **Architectural Model and Planification Algorithm for the Self-Management of Elastic Cloud Applications**, *Loic Letondeur, Orange, France.*
- **Autonomic Multi-Target Deployment of Science and Engineering HPC Applications**, *Vaidy Sunderam, and Jaroslaw Slawinski, Emory University. US.*
- **Invited Talk: When things get noisy: dealing with ubiquitously uncertain inputs**, *Lei Fang and Simon Dobson.*

Session V

Big Data and Storage

Thursday 11th September, 11.00-13.00

LT 311, Huxley Building

Presentations:

- **Mobile Publish/Subscribe System for Intelligent Transport Systems over a Cloud Environment**, *Aleksander Antonic, Robayet Nasim, Ivana Podnararko, and Andreas J. Kessler, Karlstad University, Sweden.*
- **Extending CometCloud to Process Dynamic Data Streams on Heterogeneous Infrastructures**, *Rafael Tolosana-Calasanz, Omer Rana, Manish Parashar, and Javier Diaz-Montes, Universidad de Zaragoza, Spain.*
- **Media Cloud Architecture, Protocols, and Storage Efficiency Challenge**, *Mohammad Azam, Kyung Hee University, South Korea.*

Session VI

Recommendation and Security

Thursday 11th September, 15.30-17.00

LT 311, Huxley Building

Presentations:

- **A Certification-based Trust Model for Autonomic Computing Systems**, *Ernesto Damiani, Univesita di Milano, Italy*
- **QuARAM Recommender: Case-Based Reasoning for IaaS Service Selection**, *Khalid Elgazzar, Patrick Martin, and Sima Soltani, Queen's University, Canada.*
- **An Efficient Heuristic-based Role Mapping Framework for Secure and Fair Collaboration in SaaS Cloud**, *Soumya K. Ghosh, Nirnay Ghosh, and Debangshu Chatterjee, Indian Institute of Technology, Kharagpur, India*

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P2P Conference

Welcome to the IEEE P2P'14 Conference

The IEEE International Conference on Peer-to-Peer Computing provides a single-track forum for presenting new research results on all aspects of P2P computing. It is the oldest and largest conference dedicated to P2P computing, and has been held every year since 2001. IEEE P2P'14 marks the fourteenth anniversary of the conference.



Session Details

Session I

Streaming

Tuesday 9th September, 11.00-13.00

LT G16, SAF Building

- *Julius Rückert, Tamara Knierim and David Hausheer.* **Clubbing with the Peers: A Measurement Study of BitTorrent Live**
- *Björn Richerzhagen, Dominik Stingl, Ronny Hans, Christian Groß and Ralf Steinmetz.* **Bypassing the Cloud: Peer-assisted Event Dissemination for Augmented Reality Games**
- *Miguel Matos, Valerio Schiavoni, Etienne Rivière, Pascal Felber and Rui Oliveira.* **LayStream: composing standard gossip protocols for live video streaming**
- *(Short) Yehia Elkhatib, Mu Mu and Nicholas Race.* **Dataset on Usage of a Live & VoD P2P IPTV Service**
- *(Short) Mengjuan Liu, Fei Lu, Xucheng Luo and Zhiguang Qin.* **An ISP-Friendly Hierarchical Overlay for P2P Live Streaming**

Session II

Overlays and Relatives & Clouds

Tuesday 9th September, 15.30-17.45

LT G16, SAF Building

- *István Hegedűs, Mark Jelasity, Levente Kocsis and Andras A. Benczur.* **Fully Distributed Robust Singular Value Decomposition**
- *Matthias Feldotto, Christian Scheideler and Kalman Graffi.* **HSkip+: A Self-Stabilizing Overlay Network for Nodes with Heterogeneous Bandwidths**
- *(Short) Matthias Wachs, Christian Grothoff and Fabian Oehlmann.* **Automatic Transport Selection and Resource Allocation for Resilient Communication in Decentralized Networks**
- *Rahma Chaabouni, Marc Sanchez-Artigas and Pedro Garcia Lopez.* **Reducing Cost in the Personal Cloud: Is BitTorrent a Better Bet?**
- *Hao Zhuang, Rameez Rahman and Karl Aberer.* **Decentralizing the Cloud: How Can Small Data Centers Cooperate**

Session III

Good Neighbors

Wednesday 10th September, 11.00-13.00

LT G16, SAF Building

- *Hani Salah, Stefanie Roos and Thorsten Strufe. Diversity Entails Improvement: A new Neighbour Selection Scheme for Kademia-type Systems*
- *Giovanni Simoni, Roberto Roverso and Alberto Montresor. RankSlicing: A decentralized protocol for supernode selection*
- *Zhongmei Yao, Daren Cline and Dmitri Loguinov. On the Tradeoff between Resilience and Degree Overload in Dynamic P2P Graphs*
- *(Short) Khalid Alhamed and Marius Silaghi. User Freedom: To Be or Not To Be a 'Supernode'*
- *(Short) Yasuhiro Ando, Hiroya Nagao, Takehiro Miyao and Kazuyuki Shudo. Routing Table Construction Method Solely Based on Query Flows for Structured Overlays*

Session IV

Storage and Replication & Privacy

Thursday 11th September, 11.00-13.00

LT G16, SAF Building

- *Xiaoyong Li and Dmitri Loguinov. Stochastic Models of Pull-Based Data Replication in P2P Systems*
- *Roy Friedman, Yoav Kantor and Amir Kantor. Replicated Erasure Codes for Storage and Repair-Traffic Efficiency*
- *Nicolaas Zeilemaker, Johan Pouwelse and Henk Sips. 4P: Performant Private Peer-to-Peer File Sharing*

- *Michael Herrmann, Ren Zhang, Kai-Chun Ning, Claudia Diaz and Bart Preneel. Censorship-Resistant and Privacy-Preserving Distributed Web Search*

Session V

Clouds (Short) & Measurements (Short)

Thursday 11th September, 16.30-18.00

LT G16, SAF Building

- *(Short) Harisankar Haridas, Sriram Kailasam and Janakiram Dharanipragada. Cloudy Knapsack Problems: an Optimization Model for Distributed Cloud-assisted Systems*
- *(Short) Xiang Zuo, Jeremy Blackburn, Nicolas Kourtellis, John Skvoretz and Adriana Iamnitchi. The Power of Indirect Ties in Friend-to-Friend Storage Systems*
- *(Short) Filipe Campos, Miguel Matos, Jose Pereira and David Rua. A peer-to-peer service architecture for the Smart Grid*
- *(Short) Ruma Paul, Peter Van Roy and Vladimir Vlassov. An Empirical Study of the Global Behavior of A Structured Overlay Network*
- *(Short) Arpad Berta, Vilmos Bilicki and Mark Jelasity. Defining and Understanding Smartphone Churn over the Internet: a Measurement Study*
- *(Short) Nicolaas Zeilemaker and Johan Pouwelse. 100 Million DHT replies*

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