UNIVERSITÉ PARIS 13

SC2/IOV/SOCA

NOV. 19-22, 2018

Maison des Sciences de l'Homme de Paris Nord

IEEE SC2 2018

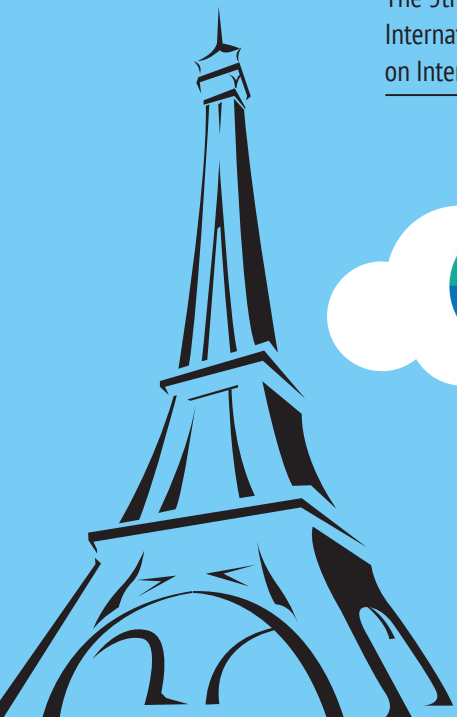
The 8th
IEEE International
Symposium on Cloud
and Services Computing

IOV 2018

The 5th
International Conference
on Internet of Vehicles

IEEE SOCA 2018

The 11th
IEEE International Conference
on Service - Oriented
Computing and Applications



USPC
Université Sorbonne Paris Cité

CAMPUS CONDORCET
Paris–Aubervilliers

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ROOM FOR TUTORIALS AND KEYNOTES : AUDITORIUM

WELCOME MESSAGE
FROM THE LOCAL ORGANIZERS

Paris 13 University is one of the thirteen universities that were created after the reorganization of the old Sorbonne after 1968. It now has 24,000 students, spread across five campuses pursuing degrees or continuing education. Truly multi-disciplinary in nature, Paris University 13 is a major center of teaching and research in the north of Paris. Paris 13 University is a member of a group of institutes of higher education (COMUE) that includes Université Sorbonne Paris Cité and the Condorcet Campus. Paris 13 University is officially categorized under French law as a « public establishment of a scientific, cultural and professional nature ». It is a legal person with pedagogical, scientific, administrative and financial autonomy.

The Villetaneuse Technical Institute (IUT) is one of the local organizers. It produces highly qualified technicians (3Y bachelor degree in the bachelor's master's doctorate system or Bologna process) with technical and professional expertise through five teaching departments. The IUT is a teaching and research institute of Paris 13 University. It delivers technical training over two years following the Baccalaureate, including an internship, culminating in the diploma of Diplôme universitaire de technologie (undergraduate technical degree). This diploma can be obtained as a first-time degree or within the framework of a combined study on-the-job training scheme. Institut Galilée is a component in sciences of Paris 13 University. It brings together undergraduate and master's degree programs, an engineering school - Sup Galilee - and seven research laboratories.

Members of both L2TI and LIPN laboratories, from Institut Galilée, participate in the organization. L2TI (Laboratory for Information Transport and Processing - EA 3043 UP13) is conducting active researches on Image processing, networks, network security, data, social networks. LIPN (IT Laboratory of Paris-Nord - UMR 7030 CNRS – UP13) is structured in five teams: A3 (Artificial Learning and Applications), AOC (Algorithms and Combinatorial Optimization), CALIN (Combinatorics, ALgorithmics and INteractions), LoVe (Logic and Verification), RCLN (Representation of Knowledge and Natural Language).

The location of our event is Maison des Sciences de l'Homme (MSH). Founded in Saint-Denis in 2001, MSH Paris Nord, Service and Research Unit supported by the CNRS and the Universities Paris 8 and Paris 13 (USR 3258), is an institution ensuring the promotion and dissemination of research in the human and social sciences. The MSH Paris Nord funds research projects through an annual call for projects on its five research axes. It also disseminates and promotes their results, notably by organizing scientific and / or artistic events for researchers, students and the general public. Such a location gives us the opportunity to open 3 our discussions of computer scientists to issues in the humanities.

We therefore included an invited lecture on the geopolitical issues of cybersecurity, a topic of importance.
Welcome to Paris 13 university. Welcome to MSH.

ENJOY YOUR STAY WITH US, COCOONING IS NOT AN OPTION !
Christophe Cérin for the local organizing committee

IMPORTANT MESSAGE
FOR THE IMPATIENT

HOW TO REACH THE CONFERENCE VENUE

MSH, 20 AVENUE GEORGE SAND, 93210 SAINT-DENIS

Metro: line 12, Aubervilliers-Front Populaire station, Exit 3, then turn right and walk on 150m.
From Paris airports to MSH: http://lipn.univ-paris13.fr/~cerin/local/GoingToMSH.pdf

WIFI ACCESS

☒ Eduroam is available everywhere at MSH
☒ An access point is also available at Auditorium

PEOPLE TO THANK FOR THEIR HELP AND INTERACTIONS

☒ Nicolas Bonnefous (MSH Paris Nord)
☒ Corinne Desprat (chef de cabinet), Alexandra Lépine (chef de cabinet adjointe), Delphine Machy (SAIC), Pascale Leneindre (Agent Comptable) Fabio Villalba, José Rodríguez-Morales (SREI), Paris 13
☒ Frédérique Bassino, Nathalie Tavares, Marie Fontanillas, Brigitte Guéveneux, Aimé Bayonga (LIPN), Paris 13
☒ Anissa Mokraoui, Azedine Beghdadi (L2TI), Paris 13
☒ Christophe Fouqueré, Laure Petrucci (Paris 13 and Réseau Francilien en Sciences Informatiques)
☒ Nabilla Bellamine, Virginie Demarne, Homère Nkwawo, Nicolas Morin (IUT de Villetaneuse), Paris 13
☒ Jean-Pierre Astruc (university president), Benoît Berthou (VP "Monde économique"), Paris 13
☒ Daria Shypova, Marie Trinh, Silvia Ceballos, Brookes Little, Tricia Yamaguchi, Erin Lyman, Patrick Kellenberger, Carmen Saliba (IEEE Computer Society), Yuliya Katsyv (IEEE Piscataway)
☒ Anna Kramer, Christine Reiss (Springer)
☒ Nicolas Sainthérant (Qarnot), Jean-Thomas Acquaviva (DDN)
☒ Nejla Amara (Audis Technologies), for supporting financially the travels of two students

MESSAGE FROM SC2 2018
GENERAL AND PROGRAM CHAIRS

It is our great honour and pleasure to welcome you to the annual event of the 8th International Symposium on Cloud and Service Computing (IEEE SC2 2018), held in Paris, France, from 19th to 22nd November 2018. IEEE SC2 is recognized for its coverage of both cloud and service computing technologies under one carefully integrated research forum.

Built on Service-Oriented Architecture (SOA) and Virtualization, cloud computing plays a key role in various innovative services and applications like big data, data mining, IoT, Network Function Virtualization (NFV), on-line games, just to mention a few. However, provision of cloud and service computing presents also a set of issues and challenges that are expected to be identified and addressed by the research community. Hence, SC2 strives to constitute an international forum for engineers and scientists from academia, industry and government to share their views on the current research problems, and to present and discuss their novel ideas, research results, and experience on all aspects of cloud and service computing and its applications. The conference identifies also new research topics, and defines the future of cloud and service computing.

This year, IEEE SC2 2018 is co-located with IEEE SOCA 2018 and IEEE IOV 2018. For the successful organization of an international conference of the size and diversity, we counted on the great support of many individuals and organizations. First of all, we would like to sincerely thank Prof. Robert Hsu and the steering committee of SC2 for their support and guidance. We would like to express our appreciation to the Finance Chair, Prof. Christophe Cérin, for taking the finance management responsibility, and for making detailed local arrangements.

We received 47 submissions, from which we selected 9 regular papers, 4 work-in-progress papers, and 8 poster papers to be presented at the conference, based on at least 4 reviews on each submission. We would like to sincerely thank our program committee members and the external reviewers for taking the responsibility for the quality of paper reviewing process, for providing valuable expertise and constructive comments to the authors, on a tight schedule. Without their help, this program would not be possible.

Last but not least, we take this opportunity to thank all the authors, participants and session chairs for their valuable efforts. We look forward to seeing you at the IEEE SC2 2018 event in Paris, France.

SC2 2018 General Chairs
Omer Rana, Cardiff university, UK
Daqing Zhang, Institute Mines-Télécom/Télécom SudParis, France

SC2 2018 General Executive Chair
Anna Kobusinska, Poznan University of Technology, Poland

SC2 2018 Program Chairs
Shu Tao, IBM Research, USA
Pascal Bouvry, Univ. of Luxembourg, Luxembourg

MESSAGE FROM SOCA 2018
GENERAL AND PROGRAM CHAIRS

Welcome to the 2018 IEEE International Conference on Service-Oriented Computing and Applications (SOCA), taking place in Paris, France from November 19th to 22nd, 2018. The SOCA conference is one of the annual events sponsored by the IEEE Computer Society Technical Committee on Business Informatics and Systems (TCBIS). This year it is jointly held with the 8th IEEE International Symposium on Cloud and Services Computing (IEEE SC2) and the 5th International Conference on Internet of Vehicles (IOV), creating a great environment for participants to meet scientists, students, professionals with diverse expertise in the same venue.

Following the trend of the development of emerging service oriented computing and applications, SOCA presents the latest research results on state-of-the-art applications in many areas such as Internet-of-Things (IoTs), Machine-to-Machine (M2M), Cyber-Physical Systems (CPS), as well as large-scale enterprise systems. Since many of the critical components on building reliable, robust, and user-centric cloud-based SOA applications and systems are still open for research, SOCA focuses on new service-oriented architecture (SOA) research opportunities. The conference addresses new research challenges on emerging applications domains like smart cities, smart logistics, smart factories and e-Health, just to mention a few.

This year the conference attracted 62 high-quality paper submissions. After a rigorous review process, in which most papers were reviewed with at least 3 reviewers, the program committee accepted 24 full papers and 10 short papers for inclusion in the conference proceedings. We are privileged to have worked together with many excellent researchers to organize the conference and to publish the proceedings. First of all, we would like to take the opportunity to express our deepest gratitude and sincerely thank the steering committee of SOCA for their support, guidance, and their contribution to attracting high quality papers. We also specially thank Dr. Jong-Chan Kim who has acted as the publication chair for SOCA for many years. Moreover, we want to express our sincere thanks to the host team in France, especially to the Finance Chair Christophe Cérin for taking the finance management responsibility, and for making detailed local arrangements. Last but not least, we greatly appreciate the help of Web Chair Dr. Ci-Wei Lan for managing the conference web site.

The excellent program and activities of SOCA 2018 are the results of diligent effort from more than 40 program committee members and conference organizers. We would like to express our sincere thanks to all program committee members and external reviewers for taking the responsibility of ensuring the quality of accepted papers, and for providing valuable and constructive comments in a very tight time schedule.

Last but not least, we would like to thank all authors, participants and session chairs for their joint efforts to ensure that SOCA has a program of the highest technical quality. We sincerely hope you will enjoy SOCA and your stay in Paris !

General Chairs
Vania Marangozova-Martin, University of Grenoble, France
Kwei-Jay Lin, University of California, Irvine, USA

Program Chairs
Anna Kobusinska, Poznan University of Technology, Poland
Jing Fan, Zhejiang University of Technology, China

MESSAGE FROM IOV 2018
GENERAL AND PUBLICATION CHAIRS, AND STEERING COMMITTEE CHAIR

As the era of Internet of Things is coming, Internet of Vehicles (IOV) plays an important role for constructing smart cities as well as in establishing smart industrial environments according to the Industry 4,0 paradigm. Smart cities are complex integrated network systems, which connects different people within automotives, different automotives and different environmental objects in cities.

In the industrial environments, IOV focuses on providing new efficient solutions with digital intervehicular data transfer and overall communications. Yet, IOV is different from Telematics, Vehicle Ad hoc Networks, and Intelligent Transportation, in which vehicles like phones can run within the whole network, and obtain various services by swarm intelligent computing with people, vehicles, and environments.

This booklet contains general information on the 5th International Conference on Internet of Vehicles (IOV 2018). We accepted a total of 21 high-quality papers selected from 41 submissions. As all previous conferences in the IOV series, the IOV 2018 was intended to play an important role for researchers and industry practitioners to exchange information regarding advancements in the state of art and practice of IOV architectures, protocols, services, and applications. It was also intended to identify emerging research topics and define the future directions of IOV and its related areas such as Internet supported autonomous driving. We believe that this edition not only presents novel and interesting ideas but also will stimulate interesting discussions from the participants and inspire new ideas that will be submitted and presented at further conferences in this series.

Organization of conferences is a hard work. It would not have been possible without the exceptional commitment of many expert volunteers. We would like to take this opportunity to extend our sincere thanks to all the authors, keynote speakers, TPC members and reviewers. Special thanks go to the entire local arrangement committee for their help in making this conference a success. We would also like to express our gratitude to all the organizations that supported our efforts to bring the conference to fruition. We are grateful to Springer for publishing the underlying proceedings. Finally, but not the least, we hope that the participants not only enjoyed the technical program during this prestigious conference but also discovered many historical attractions in Paris, to make their stay unforgettable. Thanking you for your participation in this fruitful and enjoyable IOV 2018 Conference !

Program Chairs
Andrzej M.J. Skulimowski,
Zhengguo Sheng

General Chair
Christophe Cérin

Publication Chair
Sondes Kallel

Steering Committee Chair
Ching-Hsien Hsu

PROGRAM OVERVIEW

Day 1 (Monday, 19th November 2018) - Auditorium+Salle panoramique			
Time			
08:45-15:00	Registration at MSH lobby with coffee		
09:30-11:30	**Harness AWS for research and education through the RosettaHUB e-research platform** Speakers: Karim Chine and Latifa Bouabdillah -- RosettaHub, London		
11:30-12:30	**Project Hydrogen: Unifying State-of-the-Art AI and Big Data in Apache Spark** Speaker: Tim Hunter, Databricks		
12:30-13:30	Lunch - Salle panoramique		
13:30-14-30	**Why NVIDIA is the company helping the Automotive Industry to address the huge autonomous vehicle challenge!** Speaker: Romuald Josien, NVIDIA France		
14:30-15:00	Coffee break - Salle panoramique		
15:00-16:30	**Computing on a urban heat network** Speakers: Yanik Ngoko, Grégoire Sirou, Qarnot computing, France		
16-30-18:00	**Everything you wanted to know about machine learning** Speakers: Mustapha Lebbah, Hanene Azzag, Gael Beck, university of Paris 13, France		
18:00-19:30	Welcome cocktail - Salle panoramique		
Day 2 (Tuesday, 20th November 2018)			
Time	**Auditorium**	**Amphithéâtre**	**Room 413**
09:00-16:00	Registration - MSH lobby		
09:30-9:45	SOCA/SC2/IOV/Conference Opening - Auditorium		
09:45-10:30	Keynote I - Auditorium		
10:30-11:00	Coffee break - Salle panoramique		
11:00-12:45	SOCA Session 1	SC2 Session 1	IOV Session 1
12:45-13:45	Lunch - Salle panoramique		
13:45-14:30	Keynote II - Auditorium		
14:30-15:00	Coffee break - Salle panoramique		
15:00-16:45	SOCA Session 2	SC2 Session 2	IOV Session 2
19:00-22:00	Banquet		
Day 3 (Wednesday, 21st November 2018)			
Time	**Auditorium**	**Room 413**	**Amphithéâtre**
09:00-16:00	Registration		
09.30-10:15	Keynote III - Auditorium		
10:15-10:30	Coffee break - Salle panoramique		
10:30-12:15	SOCA Session 3	SC2 Session 3	IOV Session 3
12:15-13.15	Lunch - Salle panoramique		
13:15-15:00	SOCA Session 4	SC2 & IOV Poster Session - Salle panoramique	
15:00-15:30	Coffee break - Salle panoramique		
15:30-17:15	SOCA Session 5	SOCA Session 6	IOV Session 4
Day 4 (Thursday, 22nd November 2018)			
Time	**Auditorium**		**Room 407**
09:00-11:00	Registration - MSH lobby		
09:30-11:00	SOCA Session 7		IOV Session 5
11:00-11:30	Coffee break - Auditorium patio		
11:30-12:45	**Harness AWS for research and education through the RosettaHUB e-research platform** Speakers: Karim Chine and Latifa Bouabdillah -- RosettaHub, London		
12:45-13:45	Lunch - auditorium patio		

PRESENTATION GUIDELINES

1. Regular Paper : 20 min = 15 min Presentation + 5 min Q&A
2. Short & Special Session Papers : 15 min = 12 min Presentation + 3min Q&A
3. Posters : One A1-size poster stand (portrait style) will be provided for each presenter

COMPUTING ON A URBAN HEAT NETWORK

Speakers : Yanik Ngoko, Grégoire Sirou,
Qarnot computing, France

Summary of Tutorial : Qarnot computing promotes a utility computing model in which computing and heating are delivered from a single cloud infrastructure. The model is implemented by means of a geo-distributed cloud platform based on special server nodes named digital heaters (See **https://www.qarnot.com/computing-heater_qh-1/**).

Each of these heaters embeds 3-4 processors or GPU cards, connected to a heat diffusion system. Qarnot servers are deployed in homes, offices, schools etc. and the network of space heaters that they constitute is the physical infrastructure of a distributed data center. The Qarnot model is based on a new and customized resource manager named Q.ware. In comparison with traditional ones, Q.ware supports a service provisioning model that distinguishes two types of requests: requests for heating and for computing. In addition, the requirements in computations must be balanced with those in heating. Q.ware also supports a REST computing API that serves to send and monitor batch computing jobs on the platform.

The goal of this tutorial is to present the Qarnot concepts and to teach users to exploit it. More precisely the attendees will learn :

☒ The processing architecture of the platform (how to create a geo-distributed cloud that is also a urban heating network)

☒ To create, submit and monitor tasks on a geo-distributed cloud (we will consider Machine Learning jobs and 3D rendering jobs)

☒ To run parallel jobs (We will focus on embarrassingly parallel jobs defined with the SPMD paradigm)

☒ To get a cluster from the Qarnot API (Typically such a cluster could be used to run MPI jobs)

☒ To define resource constraints in the definition of jobs

EVERYTHING YOU WANTED TO KNOW ABOUT MACHINE LEARNING

Speakers : Mustapha Lebbah, Gael Beck and Hanene Azzag,
University of Paris 13, France

Summary of tutorial : The tutorial provides basics of machine learning algorithms in order to understand foundations to develop scalable unsupervised machine learning algorithms. This course is oriented towards beginners that have no previous knowledge of machine learning techniques. We would like to teach that the construction of scalable models is not necessarily associated with strictly computer engineering. The traditional steps of modeling and estimation remain essential.

The tutorial will start from a simple review of application of unsupervised machine learning (clustering). In particular this course will point to key challenges in analyzing data sets in order to motivate the use of statistical and scalable unsupervised machine learning algorithms that will be used in the course. The course targets specific challenges to develop scalable machine learning algorithms based on Spark. A short lab session will be developed using our API C4E.

HARNESS AWS FOR RESEARCH AND EDUCATION THROUGH THE ROSETTAHUB E-RESEARCH PLATFORM

Speakers : Karim Chine and Latifa Bouabdillah,
RosettaHub, London

Summary of tutorial : The RosettaHUB technology makes it very easy for researchers, educators and students to harness public and private clouds and democratizes infrastructure-as-a-Service, HPC and big data. It provides research groups and classrooms of students with a fully managed access to Amazon's public cloud, with automated on-boarding, advanced governance and monitoring capabilities, cost optimization and multi-tenant administration. Students, educators and researchers access AWS through the RosettaHUB virtual e-Research environment which fosters reproducibility and sharing and promotes a culture of Open Science and Open Innovation. The RosettaHUB workbench helps distributed teams access scientific data in the cloud and collaborate in real-time using the most advanced data science, big data, HPC and machine learning tools and infrastructures.

The platform aims also to help Academics leverage the power of Infrastructure-as-Code and the portability of container technologies, and fosters a culture of ResOps and EduOps that could impact research and education in the same way DevOps has deeply impacted the IT landscape in recent years. RosettaHUB substantially accelerates the building of scientific data analysis pipelines as Researchers can leverage the existing catalog of scientific cloud artifacts and Scientific-Services-as-Code. The pipelines can be easily scaled up in a highly cost-effective manner using instances from the Spot Market and converted into production-ready services and applications in a short time. Any scientific infrastructure built under this framework on AWS can be very easy to share with other research groups who can reproduce it in one click. RosettaHUB helps creating scalable Science Gateways that expose the scientific infrastructures and services through interactive Web Applications easy harness by various audiences. The tutorial attendees will learn about RosettaHUB's concepts and will receive accounts on RosettaHUB and AWS with credits to practice the following :

☒ Launch RosettaHUB formations(cloud-agnostic-services-templates), work with the real-time collaborative cloud workbench. Access data storages and containers. Create snapshots of machines and formations. Share artifacts with other RosettaHUB users.

☒ Create GPU-enabled deep learning environments to teach Machine Learning at scale on AWS.

☒ Create big data environments to work with Spark/Hadoop in collaboration.

☒ Practice the administration and multi-tenancy capabilities to manage AWS pools of accounts, share artifacts, assign roles, monitor resources and budget.

☒ Create Virtual Labs using Python and experiment with the Virtual-Labs-as-Code capabilities.

☒ Create reactive scientific microservices using RosettaHUB containers, macros and meta-cloud web services

WHY NVIDIA IS THE COMPANY HELPING THE AUTOMOTIVE INDUSTRY TO ADDRESS THE HUGE AUTONOMOUS VEHICLE CHALLENGE !

Speaker : Romuald Josien,
Higher Education & Research | HPC & Deep Learning, NVIDIA Enterprise, France

Summary : NVIDIA help manufacturers build self-driving cars able to handle the full range of real-world conditions – vehicles and pedestrians, lighting at different times of day, sleet, glare, black ice… NVIDIA has dedicated time, talent and investment to AI development at the scale required for safe autonomous driving.

It includes the work over several years of hundreds of engineers and AI developers, and a massive hardware and software infrastructure. The objective of the presentation is to review why Autonomous Vehicle is so challenging and how NVIDIA help to resolve this challenge.

PROJECT HYDROGEN: UNIFYING STATE-OF-THE-ART AI AND BIG DATA IN APACHE SPARK

Speaker : Tim Hunter, Databricks

Summary : Big data and AI are joined at the hip: the best AI applications require massive amounts of constantly updated training data to build state-of-the-art models AI has always been on of the most exciting applications of big data and Apache Spark. Increasingly Spark users want to integrate Spark with distributed deep learning and machine learning frameworks built for state-of-the-art training. On the other side, increasingly DL/AI users want to handle large and complex data scenarios needed for their production pipelines.

This talk introduces a new project that substantially improves the performance and fault-recovery of distributed deep learning and machine learning frameworks on Spark. We will introduce the major directions and provide progress updates, including 1) barrier execution mode for distributed DL training, 2) fast data exchange between Spark and DL frameworks, and 3) accelerator-awareness scheduling.

Biography : Timothy Hunter received the diplôme d'ingénieur from École Polytechnique in 2007, the M.S. degree in electrical engineering from Stanford University in 2009 and the Ph.D. degree in computer science from the University of California at Berkeley in 2014.

He is currently a software engineer at Databricks and contributes to the Apache Spark MLlib project, as well as the GraphFrames, TensorFrames and Deep Learning Pipelines libraries. He has been building distributed Machine Learning systems with Spark since version 0.0.2, before Spark was an Apache Software Foundation project.

KEYNOTE 1 : TOWARDS A GENERIC SCHEDULING METHOD FOR ELASTIC SERVICES : CURRENT AND FUTURE WORKS WITH THE WOLPHIN PROJECT

Speaker: Jonathan Rivalan (AlterWay, France)

Summary : Amongst many benefits, micro-services bring natively an elastic feature regarding their loads. This can be seen as an opportunity to better share resources between services on one server, by reducing the overhead "à la VM", which quickly limits capacity planning possibilities.

In this talk we are presenting showcase results from the collaborative project Wolphin 2.0, which provides new mechanisms to better assert resources provisioning and capacity planning for elastic services, amongst them, optimal load detection and time based profiling.

Biography : AlterWay R&D team is dedicated at leveraging Cloud limitations through innovative implementations based on Open-Source solutions (OSS) and resulting in Open-Source contributions. Jonathan Rivalan, team manager since 2013, multiple R&D projects leader, put his effort in investigating new topics and new approaches, to bring novelty to the AlterWay company as well as to the OSS community.

KEYNOTE 2 : WHY CYBERSECURITY IS ALSO A GEOPOLITICAL ISSUE

Speakers : Frédérick Douzet, Alix Desforges
University of Paris 8, France

Summary : The increasing number of cyberattacks reveals that cyberspace did not bring about the "global village" that the pioneers of the Internet dreamed of. Rather it has become the arena and a channel for political, economic, and military conflicts. Cyberspace – a term invented by a science fiction writer in 1982 – entered most states' defense strategy despite the fact that the definition and scope of the term both remain unclear.

Cyber threats keep growing more sophisticated, targeted, and powerful and their effects are likely to constitute a strategic surprise for governments, companies, and civil societies.

States but also individuals, political groups, criminal and terrorist organizations use cyberspace to remotely conduct operations such as espionage, sabotage, information warfare or influence. This keynote address will show that cybersecurity is not only a technical issue but also a geopolitical one. Indeed, geopolitical analyses can shed a new light on those conflicts and participate in having a better understanding of those threats.

Biography : Frédérick Douzet is a Professor of geopolitics at the French Institute of Geopolitics (IFG) at Université Paris 8 and the founder of the center Geopolitics of the Datasphere (GEODE) opened on September 2018 at the IFG. She is also a member of the Strategic Review of Defense and National Security Committee and a commissioner of the Global Commission on the Stability of Cyberspace. Alix Desforges is a postdoctoral researcher at the center GEODE (French Institute of Geopolitics). From 2013 to 2018, she was a researcher at the Castex Chair of Cyberstrategy at the Institute of Higher National Defense Studies (IHEDN). Her PhD research is based on a geopolitical approach to cyberspace and analyzes the stakes for French defense and security strategy.

KEYNOTE 3 : LIQUID SOFTWARE IN A PROGRAMMABLE WORLD

Speaker : Cesare Pautasso
Software Institute, Faculty of Informatics, Lugano, Switzerland

Summary : Service-oriented computing has profoundly affected the personal computing experience. Users no longer run every application and store their data on a single computer. Instead they own and operate a complex multi-device ensemble made of desktop computers, laptops, phones, tablets, watches, glasses, cars, or any sort of internet-connected thing to manage their personal information and accomplish their tasks by accessing software delivered as a service.

Many approaches to achieve a liquid user experience whereby data and software can seamlessly flow and adapt between smart devices are starting to appear within the confines of proprietary platforms or may rely on centralized solutions, where data is conveniently stored in the Cloud, outside the control of the users producing and consuming it. In this talk we discuss how the open Web and emerging decentralized Web technologies can still play an important role to build a programmable world.

Biography : Cesare Pautasso is full professor at the Software Institute of the Faculty of Informatics at the University of Lugano, Switzerland. Previously he was a researcher at the IBM Zurich Research Lab and a senior researcher at ETH Zurich. He completed his graduate studies with a Ph.D. from ETH Zurich in 2004.

His research group focuses on building experimental systems to explore the intersection of Software Architecture, Web Engineering and Business Process Management with research projects on liquid software, RESTful conversation mining, microservice performance benchmarking, and interactive Web presentations.

He was the general chair of the ICWE 2016 and ECOWS 2011, program co-chair of ICSOC 2013, ECOWS 2010 and Software Composition 2008. He has also started the series of International Workshops on RESTful Design (WS-REST) at the WWW conference. He is co-editor of the IEEE Software Insights department. He has co-authored a book on SOA with REST: Principles, Patterns & Constraints for Building Enterprise Solutions with REST in 2012 and is currently finishing another titled «Just Send An Email: Anti-Patterns for email-centric organizations» available on Leanpub.

You can find more details on **http://www.pautasso.info** and follow him **@pautasso@scholar.social**

AUDITORIUM | 11:00 – 12:45 SOCA Session 1

Chair : Vania Marangozova-Martin, IMAG, Grenoble université, France

1. Microservice Design Space Analysis and Decision Documentation: A Case Study on API Management, Stefan Haselböck, Rainer Weinreich, Georg Buchgeher and Thomas Kriechbaum
2. An Architecture for Dynamic Context Recognition in an Autonomous Driving Testing Environment, Elif Eryilmaz, Frank Trollmann and Sahin Albayrak
3. A Privacy Enhanced Crowdsourcing Architecture For Road Information Mining Using Smartphones, Christian Roth and Dogan Kesdogan
4. ContAv: a Tool to Assess Availability of Container-Based Systems, Stefano Sebastio, Rahul Ghosh, Avantika Gupta and Tridib Mukherjee
5. Reducing Marketplace Response Time by Scoring Workers, Miriam Allalouf, Inessa Ainbinder, Natan Braslavski and Hodaya Mahdizada

AUDITORIUM | 15:00 – 16:45 SOCA Session 2

Chair: Anna Kobusinska, Poznan University of Technology, Poland

1. A Unified Framework for 5G Network Management Tools, Harrison Mfula and Jukka Nurminen
2. A Resource Usage Prediction System Using Functional-link and Genetic Algorithm Neural Network for Multivariate Cloud Metrics, Thieu Nguyen, Nhuan Tran, Binh Minh Nguyen and Giang Nguyen
3. Data-Aware Web Service Recommender System for Energy-Efficient Data Mining Services, Zainab Al-Zanbouri and Chen Ding
4. Data Replication Based on Common Interests in P2P Social Networks, Anna Kobusinska, Michał Boroń, Beata Szturemska and Yue-Shan Chang

AMPHITHÉÂTRE | 11:00 – 12:45 SC2 Session 1

Chair: Jonathan Lejeune, LIP6, Sorbonne Université, France

1. Unikernels vs Containers: An In-Depth Benchmarking Study in the context of Microservice Applications, Tom Goethals, Merlijn Sebrechts, Ankita Atrey, Bruno Volckaert and Filip De Turck
2. Anticipatory User Plane Management for 5G, Sebastian Peters and Manzoor Khan
3. Enhanced Cost Analysis of Multiple VirtualMachines Live Migration in VMware Environments, Mohamed Elsaid, Ahmed Shawish and Christoph Meinel
4. Hera Object Storage: A Seamless, Automated Multi-Tiering Solution on Top of OpenStack Swift, Remo Höppli, Thomas Michael Bohnert and Leonardo Militano
5. A Novel Automated Tiered Storage Architecture for Achieving both Cost Saving and QoE, Ryo Irie, Ying-Feng Hsu, Shuuichirou Murata and Morito Matsuoka

AMPHITHÉÂTRE | 15:00 – 16:45 SC2 Session 2

Chair: Leila Abidi, Paris 13 university, France

1. [WiP] Contextual Oblivious Similarity Searching for Encrypted Data on Cloud Storage Services, Sneha Umesh Lavnis, Divyaa Manimaran Elango and Horacio Gonzalez-Velez
2. [WiP] Implementation of Smart Contracts Using Hybrid Architectures with On and Off–Blockchain Components, Carlos Molina-Jimenez, Ioannis Sfyrakis, Meng Weng Wong, Ellis Solaiman, Irene Ng, Alexis Chun and Jon Crowcroft
3. [WiP] Cloud Native 5G Virtual Network Functions: Design Principles and Use Cases, Sofiane Imadali and Ayoub Bousselmi
4. [WiP] A Balanced Partitioning Mechanism Using Collapsed-Condensed Trie in MapReduce, Hsing-Lung Chen and Syu-Huan Chen

ROOM 413 | 11:00 – 12:45 IoV Session 1

Chair: Khaled Boussetta, Paris 13 University, France

1. Towards the security measures of the Vehicular Ad-Hoc Networks, Krzysztof Stepień and Aneta Poniszewska-Maranda.
2. Electric Vehicle Charging Queue Management with Blockchain, Subhasis Thakur and John Breslin.
3. Towards a blockchain-based SD-IoV for applications authentication and trust management, Léo Mendiboure, Mohamed-Aymen Chalouf and Francine Krief.
4. A Secure Authentication Protocol for Wireless Sensor Network in Smart Vehicular System, Chun-Ta Li, Chi-Yao Weng, Chin-Ling Chen and Cheng-Chi Lee.
5. Credit Based Incentive Approach for V2V Cooperation In Vehicular Cloud Computing, Lylia Alouache, Nga Nguyen, Makhlouf Aliouat and Rachid Chelouah.

ROOM 413 | 15:00 – 16:45 IoV Session 2

Chair: Robert Hsu, National Chung Cheng University, Taiwan

1. Vehicular Fog Computing on Top of a Virtualization Layer, Martin Lopez-Nores, Jack Fernando Bravo-Torres, Esteban Ordoñez and Jose Pazos-Arias.
2. Vehicular Grouping and Network Formation: Virtualization of Network Self-Healing, Duaa Al-Hamid and Adnan Al-Anbuky.
3. Evaluate Good Bus Driving Behavior with LSTM, Qingwen Han, Xiaochang Hu, Shibiao He, Lingqiu Zeng, Lei Ye and Xiaohan Yuan.
4. Social Knowledge to Improve Situation Awareness of Assistance Systems in City Driving, Rubén Fuentes-Fernández and Alberto Fernández-Isabel.

AUDITORIUM | 10:30 – 12:15 SOCA Session 3

Chair: Kais Klai, Paris 13 university, France

1. Modeling and Automated Deployment of Serverless Applications using TOSCA, Michael Wurster, Uwe Breitenbücher, Kálmán Képes, Frank Leymann and Vladimir Yussupov
2. Proactive Content Caching Strategy with Router Reassignment in Content Centric Networks based SDN, Amna Fekih and Sonia Gaied
3. Video Streaming Forwarding in a Smart City's Vanet, Emna Bouzid Smida, Sonia Gaied Fantar and Habib Youssef
4. [WiP] A Workflow and Cloud Based Service-Oriented Architecture for Distributed Manufacturing in Industry 4.0 Context, Kerem Kayabay, Mert Onuralp Gökalp, P. Erhan Eren and Altan Koçyiğit
5. [WiP] Predictive Maintenance in Healthcare Services with Big Data Technologies, Selin Çoban, Mert Onuralp Gökalp, Ebru Gökalp, P. Erhan Eren and Altan Koçyiğit
6. [WiP] Sentiment Analysis Electronic Healthcare System Based on Heart Rate Monitoring Smart Bracelet, Iuliana Marin, Nicolae Goga and Andrei Doncescu

AUDITORIUM | 13:15 – 15:00 SOCA Session 4

Chair: Sotiris Moschoyiannis, University of Surrey, UK

1. ArPico: Using Pictures to Build Localization Service for Indoor IoT Applications, Yu Meng, Kwei-Jay Lin, Bingnan Peng, Bo-Lung Tsai and Chih-Sheng Shih
2. Kubernetes or OpenShift? Which Technology Best Suits Eclipse Hono IoT Deployements, Mohab Aly, Foutse Khomh and Soumaya Yacout
3. An IoT Middleware of Data Service, Wu Yu and Minbo Li
4. [WiP] An IoT-based Automation System for Legacy Homes: A Use Case for Lighting System, Naser Hossein Motlagh, Siavash Haghighat Khajavi, Alireza Jaribion and Jan Holmström
5. [WiP] A Framework for Access Coordination in IoT, Oscar Novo

AUDITORIUM | 15:30 – 17:15 SOCA Session 5

Chair: Elif Eryilmaz, TU Berlin, Germany

1. An Expert Interview Study on Areas of Microservice Design, Stefan Haselböck, Rainer Weinreich and Georg Buchgeher
2. Using Osmotic Services Composition to Dynamic Load Balancing of Smart City Applications, Arthur Souza, Zhenyu Wen, Nelio Cacho, Alexander Romanovsky, Philip James and Rajiv Rajan
3. Nonstationary Concurrent Service Feature Identification Algorithm, Jun Guo, Ying Tian, Sihua Zhang, Min Fan and Bin Zhang
4. A Formal Approach for Cloud Composite Services Verification, Aida Lahouij, Lazhar Hamel and Graiet Mohamed
5. Virtual Machine Integrity Verification in Crowd-Resourcing Virtual Laboratory, Johannes Harungguan Sianipar, Christian Willems and Christoph Meinel

ROOM 413 | 15:30 – 17:15 SOCA Session 6
Chair: Michael Wurster, University of Stuttgart, Germany

1. Certified Information Flow Analysis of Service Implementations, Thomas Heinze and Jasmin Türker
2. Trace-based Verification of Rule-based Service Choreographies, Sotiris Moschoyiannis, Leandros Maglaras and Nurulhuda A Manaf
3. PREDICAT: A semantic service-oriented platform for data interoperability and linking in earth observation and disaster prediction, Maroua Masmoudi, Hela Taktak, Sana Ben Abdallah, Khouloud Boukadi, Mohamed Hedi Karray, Hajer Baazaoui, Bernard Archimede, Michael Mrissa and Chirine Ghedira Guegan
4. Policy-based Compliance Control within Inter-organizational Service Integration Platforms, Laura González and Raul Ruggia

ROOM 413 | 10:30 – 12:15 SC2 Session 3
Chair: Quan Yuan, Beijing University of Posts and Telecommunications

1. Dynamic Scheduling for Seamless Computing, Florian Katenbrink, Andreas Seitz, Ludwig Mittermeier, Harald Müller and Bernd Bruegge
2. Accelerating the Computation of Multi-Objectives Scheduling Solutions for Cloud Computing, Christophe Cerin, Tarek Menouer and Mustapha Lebbah
3. Get Your Head Out of the Clouds: The Illusion of Confidentiality & Privacy, Vincent Urias, William Stout, Caleb Loverro and Brian Van Leeuwen
4. SPDK-vhost: Accelerating I/Os in virtual machines on physical NVMe SSDs via user space vhost target, Ziye Yang, Changpeng Liu, Yanbo Zhou, Xiaodong Liu and Gang Cao

SALLE PANORAMIQUE | 13:15 – 15:00 SC2&IOV Poster Session
Chair: Andrzej M.J. Skulimowski, AGH University of Science and Technology, Kraków, Poland

1. [SC2] SPaaS-NFV: Enabling Stream-Processing-as-a-Service for NFV, Yuchia Tseng, Gopalasingham Aravinthan, Sofiane Imadali, Drissa Houatra and Bruno Mongazon-Cazavet
2. [SC2] QoS-aware Service Composition using HTN Planner, Yue Song, Qibo Sun, Ao Zhou and Shangguang Wang
3. [SC2] A New Approach For Prediction of Lung Carcinoma Using Back Propagation Neural Network with Decision Tree Classifiers, Ching-Hsien Hsu, Gunasekaran Manogaran, Parthasarathy Panchatcharam and Vivekanandan S.
4. [SC2] Social Media Data Analysis using MapReduce Programming Model and Training a Tweet Classifier using Apache Mahout, Umit Demirbaga and Devki Nandan Jha
5. [SC2] Improving the Performance of Stock Trend Prediction by Applying GA to Feature Selection, Tian Xia, Qibo Sun, Ao Zhou, Shangguang Wang, Shilong Xiong and Siyi Gao
6. [SC2] A Security Proxy to Cloud Storage Backends based on an Efficient Wildcard Searchable Encryption, Shen-Ming Chung, Ming-Der Shieh and Tzi-Cker Chiueh
7. [SC2] Design of the cost effective execution worker scheduling algorithm for FaaS platform using two-step allocation and dynamic scaling, Youngho Kim and Gyuil Cha

8. [SC2] Enabling RETE Algorithm for RDFS Reasoning on Apache Spark, Hyunsu Ju and Sangyoon Oh
9. [IOV] Autonomous vehicle traffic simulation at intersections, Andrzej M.J. Skulimowski, Michał Drapała
10. Invited poster : New Profile Recommendation Approach Based on Multi-Criteria Algorithm, Tarek Menouer and Patrice Darmon, Umanis R&D - Levallois Perret, France

AMPHITHÉÂTRE | 10:30 – 12:15 IoV Session 3

Chair: Zhengguo Sheng, The University of Sussex, UK

1. Network architectures in Internet of Vehicles (IoV) : Review, protocols analysis, challenges and issues, Livinus Tuyisenge, Marwane Ayaida, Samir Tohme and Lissan-Eddine Afilal.
2. Improved Latency of CAN Vehicle Data Extraction Method, Kavian Khosravinia, Mohd Khair Hassan, Ribhan Zafira Abdul Rahman and Syed Abdul Rahman Al-Haddad.
3. GeoDTC: A New Geographic Routing Protocol based on Distance, Time and Custody Transfer, Arslane Hamza-Cherif, Khaled Boussetta, Gladys Diaz and Fedoua Lahfa.
4. User-centric vs Network-centric Vertical Handover Algorithms in 5G Vehicular Networks, Nadia Mouawad, Rola Naja and Samir Tohmé.

AMPHITHÉÂTRE | 15:30 – 17:15 IoV Session 4

Chair: Khaled Boussetta, Université Paris 13

1. AMoDSim: An Efficient and Modular Simulation Framework for Autonomous Mobility on Demand, Andrea Di Maria, Andrea Araldo, Giovanni Morana and Antonella Di Stefano.
2. Aggregated Multi-Deep Deterministic Policy Gradient for Self-Driving Policy, Junta Wu and Huiyun Li.
3. HESAVE: An Approach for Online Heuristic GPS Trajectory Sampling, Zexin Yan, Zhihan Liu and Quan Yuan.
4. Mobility as a Service enabled by the Autonomous Driving, Manzoor Khan and Christian Rakow.

AUDITORIUM | 09:30 – 11:15 SOCA Session 7

Chair: Kwei-Jay Lin, University of California, Irvine, USA

1. [WiP] Web Services Classification using an Improved Text Mining Technique, Sidra Shafi and Usman Qamar
2. [WiP] IoT Blockchain Technologies for Smart Sensors based on Raspberry Pi, Victor Román and Joaquin Ordieres
3. [WiP] A Novel Method for Big Data Analytics and Summarization based on Fuzzy Similarity Measure, Alireza Jaribion, Siavash Haghighat Khajavi, Naser Hossein Motlagh and Jan Holmström
4. [WiP] Formal Modelling of IT Resource Allocation in Business Processes, Ikram Garfatta, Kais Klai, Mohamed Graiet and Walid Gaaloul
5. [WiP] HTU: An Efficient Hash-Trie Data Structure for URL matching for Programmable Web Resources, Igneta Dsouza, Hrishikesh Dewan, Prashant Singh and R. C. Hansdah

ROOM 407 | 09:30 – 11:15 IoV Session 5

Chair: Sondes Khemiri Kallel, UVSQ, France

1. Adaptive Multiple Task Assignments for UAVs using Discrete Particle Swarm Optimization, Kun Chen, Qibo Sun, Ao Zhou and Shangguang Wang.
2. An Acceleration Method for Similar Time-series Finding, Yuan Yuan, Qibo Sun, Ao Zhou, Shangguang Wang and Siyi Gao.
3. Dependability Aware Protocol for Urgency Messages Delivery in IoV, Zibouda Aliouat and Makhlouf Aliouat.
4. Development of a mobile Functional Near-infrared Spectroscopy prototype, Nils Volkening, Anirudh Unni, Sebastian Fudickar, Jochem W. Rieger and Andreas Hein.

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