

# **2021 24th Conference on Innovation in Clouds, Internet and Networks and Workshops (ICIN 2021)**

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1-4 March 2021**



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Monday, March 1

Monday, March 1 11:30 - 12:30

### K1: Keynote 1

Vertical Edge Computing and Networking

**Zhe (David) Lou**

Chair: Alex Galis (University College London (UCL), United Kingdom (Great Britain))

Monday, March 1 14:00 - 15:00

### S1: Service Chaining and Orchestration

Chair: Prosper Chemouil (Cnam, France & IEEE ComSoc, USA)

#### **Supporting VNF chains: an implementation using Segment Routing and PCEP 1**

[Cees Portegies](#) (University of Amsterdam, The Netherlands); [Marijke Kaat](#) (SURF, The Netherlands); [Paola Grosso](#) (University of Amsterdam, The Netherlands)

#### **Slice-aware Service Chaining 6**

[Zoltán Zsóka](#) and [Khalil Mebarkia](#) (Budapest University of Technology and Economics, Hungary)

#### **Supporting SIP Port Mapping and RTP Affinity Constraints in Container Orchestration Environments 13**

[Ramiro Liscano](#), [Samridhi Samridhi](#), [Akramul Azim](#) and [Nahid Khan](#) (Ontario Tech University, Canada); [Abdul Zainul Abedin](#) (University of Ontario Institute of Technology, Oshawa, ON, Canada); [Brian Pulito](#) (IBM, USA); [Yee-Kang Chang](#) (IBM, Canada)

Monday, March 1 15:30 - 16:30

### S2: Applications and Planning

Chair: Noel Crespi (Institut Mines-Télécom, Télécom SudParis, France)

#### **Predictive Framework for Haptic Enabled VR-based Remote Phobia Treatment in Cloud/Fog Environment 20**

[Farinaz Rasouli](#), [Amin Ebrahimzadeh](#), [Somayeh Kianpisheh](#) and [Nattakorn Promwongsa](#) (Concordia University, Canada); [Fatna Belqasmi](#) (Zayed University, United Arab Emirates); [Roch Glitho](#) (Concordia University, Canada)

#### **A Multi-agent OpenAI Gym Environment for Telecom Providers Cooperation 28**

[Tangui Le Gléau](#) (Orange Labs, France); [Xavier Marjou](#) (Orange, France); [Tayeb Lemlouma](#) (IRISA Lab and Rennes 1 University, France); [Benoit Radier](#) (Orange Labs, France)

#### **Evaluating the impact of Tower Companies on the telecommunications market 33**

[Fabrice M. Guillemin](#) and [Veronica Quintuna Rodriguez](#) (Orange Labs, France)

Monday, March 1 17:00 - 18:15

### S3: Measurements and QoS

Chair: Rogier Noldus (Ericsson, The Netherlands)

#### **Traffic Analysis in Support of Hybrid SDN Campus Architectures for Enhanced Cybersecurity 41**

[William Brockelsby](#) (Duke University & North Carolina State University, USA); [Rudra Dutta](#) (North Carolina State University,

USA)

**Cloud Telemetry Modeling via Residual Gauss-Markov Random Fields 49**

Nicholas Charles Landolfi, Daniel O'Neill and Sanjay Lall (Stanford University, USA)

**Comparing Feature Extraction techniques using SVM for Early Fault Classification in NFV context 57**

Arij Elmajed (Univ Rennes, INRIA, France); Frederic Faucheux (Nokia Bell Labs, France)

**Tunnelless SDN overlay architecture for flow based QoS management 62**

Ignacio Brugnoli and Martín Fernández (Univesidad de la República, Uruguay); Diego Mazzuco (Univesidad de la República, Facultad de Ingeniería, Uruguay); Gabriel Gómez Sena and Claudina Rattaro (Universidad de la República & Facultad de Ingeniería, Uruguay); Santiago Bentancur (Universidad de La República, Facultad de Ingeniería, Uruguay)

Tuesday, March 2

Tuesday, March 2 11:00 - 11:30

**S4: Softwarization I**

Chair: Elisa Rojas (University of Alcala, Spain)

**A Genetic Approach to Continuous Optimization of Virtual Network Embedding 70**

Pedro Martinez-Julia and Ved P. Kafle (National Institute of Information and Communications Technology, Japan); Hitoshi Asaeda (National Institute of Information and Communications Technology (NICT), Japan)

**5G-Serv: Decoupling User Control and Network Control in the 3GPP 5G Network 75**

Meghna Khaturia (IIT Bombay, India); Akshatha Nayak Manjeshwar and Pranav Jha (Indian Institute of Technology Bombay, India); Abhay Karandikar (IIT Bombay, India)

Tuesday, March 2 11:30 - 12:30

**K2: Keynote 2**

Towards B5G - an operator's view point

**Luis Miguel Contreras Murillo**

Chair: Alex Galis (University College London (UCL), United Kingdom (Great Britain))

Tuesday, March 2 14:00 - 15:30

**D1: Demo session I**

Chair: Piotr Boryło (AGH University of Science and Technology, Poland)

**On-demand Key Distribution for Cloud Networks 80**

Nicolae Paladi (Lund University & RISE, Sweden); Marco Tiloca (RISE Research Institutes of Sweden, Sweden); Pegah Nikbakht Bideh and Martin Hell (Lund University, Sweden)

**DEMO: top-k cardinality estimation with HyperLogLog sketches 83**

Valerio Bruschi (University of Rome Tor Vergata & CNIT, Italy); Salvatore Pontarelli (National Inter-University Consortium for Telecommunications (CNIT), Italy); Jerome Tollet (Cisco Systems, France); David Barach (Cisco Systems, USA); Giuseppe Bianchi (University of Rome "Tor Vergata", Italy)

**Demo: Leveraging SDN in Critical Infrastructures 86**

Simon Buttgerit, Michael Rossberg and Michael Pfeiffer (Technische Universität Ilmenau, Germany); Guenter Schaefer

(Technische Universitaet Ilmenau, Germany)

**An Application of Kubernetes Cluster Federation in Fog Computing 89**

Francescomaria Faticanti (Fondazione Bruno Kessler (FBK) & University of Trento, Italy); [Daniele Santoro](#), Silvio Cretti and Domenico Siracusa (Fondazione Bruno Kessler, Italy)

Tuesday, March 2 16:00 - 17:00

**S5: Green Networking**

Chair: Roberto Riggio (RISE Research Institute of Sweden, Sweden)

**Online Energy-efficient Resource Allocation in Cloud Computing Data Centers 92**

[Habib Ben Abdallah](#), Afeez Sanni and Krunal Thummar (University of Winnipeg, Canada); Talal Halabi (The University of Winnipeg, Canada)

**Resource Tuning for Energy Efficient Slicing 100**

[Paul Veitch](#) (BT & Bt, United Kingdom (Great Britain)); John J Browne and Chris MacNamara (Intel Corporation, Ireland)

**Assessing the carbon footprint of the data transmission on a backbone network 105**

[Marion Ficher](#) (Centre de Recherches Interdisciplinaires & RENATER, France); Françoise Berthoud (CNRS, France); Anne-Laure Ligozat (LIMSI & ENSIIE, France); Patrick Sigonneau, Maxime Wisslé and Badis Tebbani (RENATER, France)

Wednesday, March 3

Wednesday, March 3 11:30 - 12:30

**S6: AI in Networking**

Chair: Amina Boubendir (Orange Labs, France)

**Leveraging the serverless paradigm for realizing machine learning pipelines across the edge-cloud continuum 110**

[Efterpi Paraskevoulakou](#) and Dimosthenis Kyriazis (University of Piraeus, Greece)

**Learning-based Incast Performance Inference in Software-Defined Data Centers 118**

[Kokouvi Benoit Nougnanke](#) (LAAS-CNRS & Univ de Toulouse, France); Yann Labit (LAAS-CNRS, Université de Toulouse, France); Marc Bruyere (IIJ Innovation Institute & The University of Tokyo, Japan); Simone Ferlin (Ericsson AB, Sweden); Ulrich Matchi Aïvodji (Université du Québec à Montréal (UQAM), Canada)

**SYN Flood Attack Detection and Mitigation using Machine Learning Traffic Classification and Programmable Data Plane Filtering 126**

[Marinos Dimolianis](#), Adam Pavlidis and Vasilis Maglaris (National Technical University of Athens, Greece)

Wednesday, March 3 14:00 - 15:00

**K3: Keynote 3**

FlexNGIA - The New Frontiers for Future Tactile Internet

**Mohamed Faten Zhani**

Chair: Marie-Jose Montpetit (Concordia University, Canada)

Wednesday, March 3 15:30 - 16:30

## D2: Demo session II

Chair: Molka Gharbaoui (CNIT, Italy)

### ***Toward Operative QoE Models using Virtual Multimedia IP-based Streaming Services* 134**

Sofiene Jelassi (University of Rennes 1, France); Gerardo Rubino (INRIA, France)

### ***Intelligent Monitoring of IoT Devices using Neural Networks* 137**

Ashima Chawla (Athlone Institute of Technology, Ireland); Pradeep Babu (Workay, Ireland); Trushnesh Gawande and Erik Aumayr (Ericsson, Ireland); Paul Jacob and Sheila Fallon (Athlone Institute of Technology, Ireland)

### ***The SYRROCA AI-empowered network automation platform* 140**

Alessio Diamanti (Orange Labs & Cnam, France); José M. Sánchez Vilchez (Orange Labs, France); Stefano Secci (Cnam, France)

Thursday, March 4

Thursday, March 4 11:30 - 12:30

## K4: Keynote 4

Maturing Decentralised CDNs using InterPlanetary File System

**Yiannis Psaras**

Chair: Jie Tang (Tsinghua University, China)

Thursday, March 4 14:00 - 15:00

## S7: Softwarization II

Chair: Piotr Boryło (AGH University of Science and Technology, Poland)

### ***VNF Placement Problem: A Multi-Tenant Intent-Based Networking Approach* 143**

Aris Leivadreas (École de Technologie Supérieure, Canada); Matthias Falkner (Cisco, Germany)

### ***The Offline Virtual Network Function Packing Problem* 151**

Yannick Carlinet, Eric Gourdin and Nancy Perrot (Orange Labs, France)

### ***NFV/SDN Based Multiple Upstream Interfaces Multicast Proxy Service* 159**

David Fernández (Universidad Politécnica de Madrid, Spain); Luis M. Contreras (Telefonica, Spain); Ricardo Flores Moyano (Universidad San Francisco de Quito, Ecuador); Sandra García (Universidad Politécnica de Madrid, Spain)

Thursday, March 4 15:30 - 17:00

## DEP: Distinguished Expert Panel

Re-thinking Network Programmability and Computing

Chair: Alex Galis (University College London (UCL), United Kingdom (Great Britain))