GREEN
NETWORKING
AND
CLOUD
COMPUTING

2022 GENIAL Summer School

8-17th June 2022

Locations: Faculté des Sciences & Technologies and Centre Prouvé, Nancy, France

The 2nd GENIAL summer school is organized by Université de Lorraine and hosted in Nancy. It consists of two parts:

- the thesis presentations at Faculty of Sciences & Technologies of Université de Lorraine

- the participation to the 6th IFAC Symposium on Telematics Applications at the Centre Prouvé (Nancy congress centre)

Details for the venue are provided at the end of this document.

1 Instructions for students

For Cohort#1, the 30 minutes timeslot per student is divided in two parts: 20 minutes presentation and 10 minutes questions/answers. For Cohort#2, the timing for students presentations is limited to 5 minutes. Attendance is mandatory for the students during the whole duration of the school.

2 Programme

June 8th, 2022 Amphi 7	
12.30-14.00	Lunch
14.00-14.30	Opening ceremony
14.30-16.00	Master thesis Cohort#1 - session 1 *Chair*: Ah-Lian Kor • Mahnoor Mehmood Malik, *Context-aware contact tracing in pandemic situations* • Hien Ngo Le Huy, *Cognitive System for an Autonomous Vehicle* • Yacine Rabehi, *Cognitive IoT for Smart Homes*
16.00-16.20	Break

June 8th, 2022 Amphi 7 – continued	
16.20-17.50	Master thesis Cohort#1 - session 2 *Chair*: Solomon Oyelere • Hanna *Woldeselassie Ogbazghi, A new ICN caching strategy for IoT applications* • Fatema Mirza, *IoT Workload Characterization in Next Generation Cloud Systems* • Md Abu Ahammed Babu, *Notification Oriented Paradigm as a Green Technology*

June 9th, 2022 Amphi 8	
08.45-09.00	Breakfast
09.00-10.30	Master thesis Cohort#1 - session 3 *Chair*: Marta Chinnici • Feter Akira Vedaalana Sitepu, *Performance evaluation of various QUIC implementations* • Otabek Sobirov, *Energy Efficient Communication Scheduling for IoT-based waterbirds monitoring: Machine Learning Strategies* • Romain Didier, *Machine learning at the network edge*
10.30-11.00	Coffee break
11.00-12.10	Master thesis Cohort#2 - session 1 *Chair*: JPG • Nafisah Abidemi Abdulkadir, *Advanced Data Analytics Modelling for Air Quality Assessment* • Mirjalol Aminov, *Adversarial Machine (Deep) Learning-based Robustification in 5G networks* • Nadia Charef, *AI-based Energy Models for Polymorphic Duty-Cycling in WSN based IoT Nets* • Kalyan Reddy Karnati Pavan, *Cognitive Agents learning by imitating social interactions* • John Wannerkawahara, *Context-aware proactive alerts for bicycle riders* • Nikita Lizbeth Punnoose, *Dynamic resource allocation for Edge computing* • Noor Zisad Sharif, *Evolutionary BRBES based Explainable AI to predict air pollution*
12.30-14.00	Lunch
14.00-16.00	Master thesis Cohort#1 - session 4 *Chair*: Éric Rondeau • Ameer Hamza, *Deep learning for smart navigation* • Ashmita Thapa, *Benchmarking and energy efficiency of cloud gaming experience* • Josue Becerra Rico, *The sustainable workforce* • Tareq B M Alqazzaz, *Tensor-based data analysis for intelligent networks*
16.00-16.30	Coffee break

June 9th, 2022 Amphi 8 – continued	
16.30-17.50	**Master thesis Cohort#2 - session 2** *Chair*: Solomon Oyelere • Hassan Adam Ali Manasik, *Green networking using N-way data decompositions* • Md Sakibul Islam, *Logging geolocation information of UEs (User Experience) in an industrial IoT setting using Blockchain based distributed ledger technology* • Chandan Singh, *Machine learning trained by laser diagnostics for clean combustion modeling: an aiding tool for identification and prediction of combustion regimes* • Nadir Arfi, *Mission-based Ad-Hoc Networks for UAM (Urban Air Mobility) swarm UAS (Unmanned Aerial System) using a Distributed tree algorithm* • Smritikana Maity, *Public town art using mixed reality - Cloud native deployment of mixed reality publications for social interactions* • Long Do Ha, *Real-time-sensors* • Muiz Olalekan Raheem, *Rogue Drone detection* • Marianna Oleotti, *Spatio-Temporal Graph Convolution Neural Networks (STG-CNN) for Semantic Understanding of Environment*

June 10th, 2022 Amphi 7	
08.45-09.00	Breakfast
09.00-09.40	Activities of an associate partner Abderrezak Benyahia (University of Batna 2, Algeria) *Chair*: Éric Rondeau
09.40.00-10.40	**Master thesis Cohort#2 - session 3** *Chair*: JPG • Brianna Nicole Swan, *Strengthening social contacts and care for older people using mixed reality and metaverse for 5G network* • Diana Mustakhova, *Sustainable communicating materials* • Arsalan Ahmed, *Toward Environmental Digital Twinning: IoT-based Waterbirds Monitoring Case Study* • Daniel Rene Olave Ibanez, *Towards automatic deployment of IoT infrastructure for environmental monitoring* • Md Asif Mahmod T Siddique, *Unsupervised learning on brain-inspired computers: Exploring Hypreseed algorithms on Intel's Loihi neuromorphic chip* • Meshal Iqbal Shah, *Using AI to generate robot disassembly planning in autonomous remanufacturing process based on slicing and CAD technologies*
10.40-11.00	Coffee break
11.00-12.30	**Master thesis Cohort#1 - session 5** *Chair*: Ah-Lian Kor • Wania Khan, *Advanced Data Analytics Modelling for Evidence-based Data Center Energy Management* • Elyas Khorasani, *Challenges and opportunities of Blockchain based system for energy communities* • Noah Weldeab, *Cognitive System for a Smart Data Center*
12.30-14.00	Lunch

June 10th, 2022 Amphi 7 – continued	
14.00-15.30	Master thesis Cohort#1 - session 6 *Chair*: Karl Andersson • Samuel Asiwaju, *Energy efficiency with Cooperative transmissions* • Mohammad Newaj Jamil, *Network intelligence for enhanced Multi-Access Edge Computing (MEC) in 5G* • Mohammad Messbah Uddin, *Power-aware Routing, and Data forwarding protocols for Energy Harvesting FANETs*
15.30-16.00	Coffee break
16.00-18.00	Alumni & student sessions

June 11th, 2022 CRAN	
09.00-11.00	GENIAL Steering committee meeting

June 13th, 2022 Trip to Strasbourg	
07.00-17.00	To be announced during the school

| June 15-17th, 2022 Centre Prouvé, Nancy	
09.00-18.00	See appendix

3 Venue

From 8 to 10 June, the summer school is organized at the Faculté des Sciences et Technologies.

Campus Aiguillettes is located in Vandœuvre-lès-Nancy, boulevard des Aiguillettes. It is easy to reach, by mass transport, from the downtown of Nancy with public transport:

- Take the Tram No. 1 to "Vélodrome" or "Reclus" station; you will then have approx. 300 meters by walk.

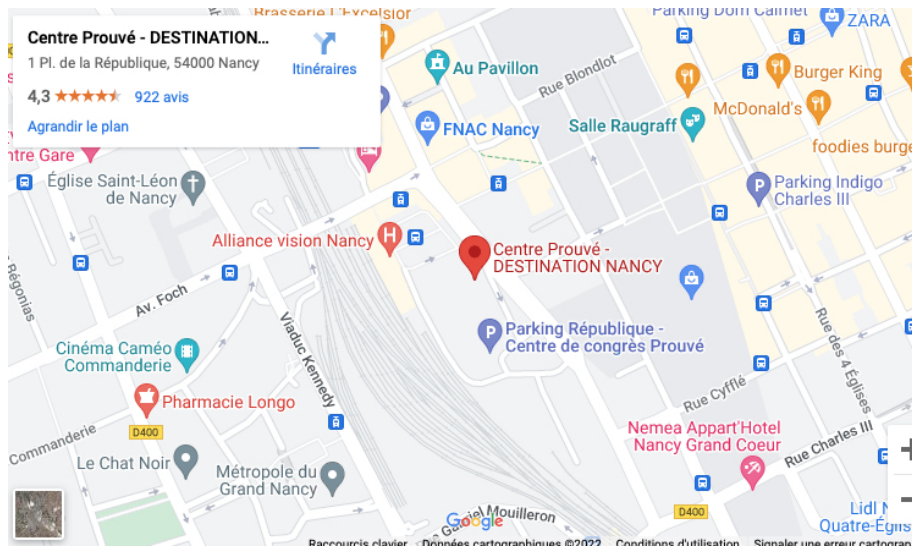- or Take the Tram No. 3 to "Joseph Laurent' or "UFR STAPS"

The event will be organized in 2 rooms of the Faculty, Amphitheaters 7 and 8.
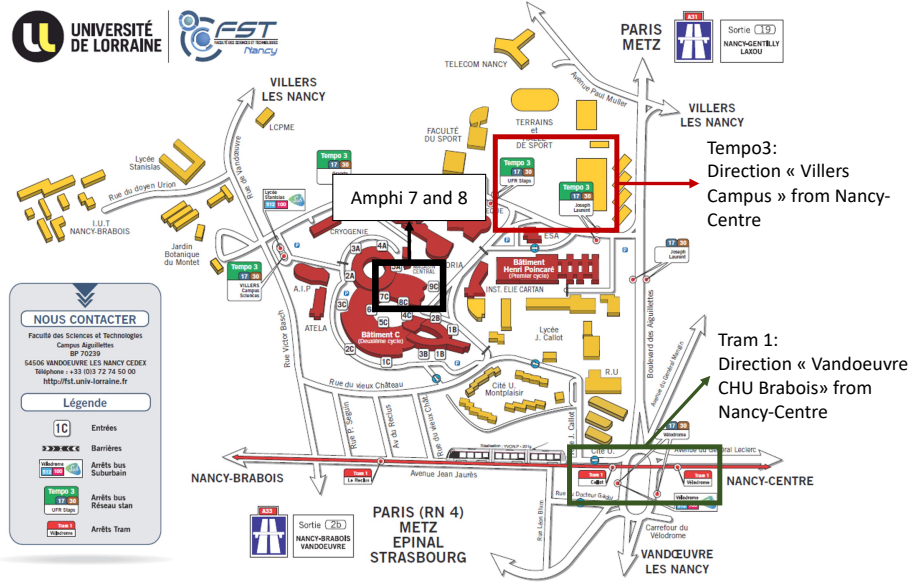
From 15 to 17, the summer school is hosted by the 6th IFAC Symposium on Telematics Applications at the Centre Prouvé (Nancy congress centre).

The congress centre is ideally situated near the railway station.

More information are available at: https://ta22.cran.univ-lorraine.fr/venue.html.

4 Programme of the symposium

Wednesday June 15th, 2022 – Room 201, 2nd floor	
08.30-09.00	Registration
09.00-09.20	Opening ceremony
09.20-10.20	**Plenary speaker - Sébastien Wiertz** *Chair*: Jérémy Robert
10.20-10.40	Coffee break
10.40-12.40	**Session 1: Industry 4.0** *Chairs*: Lei Ma, Klaus Schilling • Advanced Edge Detection of AprilTags for Precise Docking Maneuvers of Mobile Robots • A simple path-aware optimization method for mobile robots • A dual-robot cooperative welding path planning algorithm based on improved ant colony optimization • Quality Inspection for the Body-in-white Assembly of High-Speed Train Carriage Based on Machine Vision
12.40-14.00	Lunch
14.00-16.00	**Invited Session 2: Telematics Digital Twins Applications** *Chairs*: Nathalie Julien, William Derigent, Michaël David • Social Cyber-Physical Systems and Digital Twins Networks: A perspective about the future digital twin ecosystems • Autonomous Cyber-Physical System for Civil Engineering • Materials communicating with the BIM: results of the McBIM project • Digital Twin Network for the IIoT using Eclipse Ditto and Hono
16.00-16.20	Coffee break
16.20-18.20	**Special session RED WoLF** **Rethink Electricity Distribution Without Load Following** *Chairs*: Giuseppe Colantuono, Éric Rondeau • The RED WoLF project: underlying physical and algorithmic ideas • Greenhouse Gas Emission Reduction in Residential Buildings: Comparison between two algorithms • Why Oldham has chosen to deliver two RED WoLF pilots, how we are doing this in practice and what opportunities are there for the future • CO_2 minimization in a community with a shared battery

Thursday June 16th, 2022 – Room 201, 2nd floor	
08.40-09.00	Registration
09.00-10.00	**IFAC TC3.3 meeting** *Chair*: Lei Ma
10.00-10.20	Coffee break
10.20-12.20	**Session 3: Control of networks** *Chairs*: Karl-Erik Arzen, Danfeng Sun • Vickrey-Clarke-Groves Auction-Based Storage Allocation for Distributed Camera Systems • Critical Logical Link Assessment for Improving Industrial Wireless Communication Systems • Multi-criteria detection method for non-determinist SDN control • SABINE: Self-Adaptive BlockchaIn coNsEnsus
12.20-14.00	Lunch
14.00-15.30	**Session 4a: Remote sensors, data acquisition** *Chairs*: Helge Andreas Lauterbach, Éric Rondeau • Pose estimation and mapping based on IMU and LiDAR • An Energy-Efficient WMSN-based System for Endangered Birds Monitoring • Reinforcement Learning TDMA-Based MAC Scheduling in the Industrial Internet of Things: A Survey
15.30-16.00	Coffee break
16.00-17.00	**Session 4b: Remote sensors, data acquisition** *Chairs*: Helge Andreas Lauterbach, Éric Rondeau • Driver vigilance estimation with Bayesian LSTM Auto-encoder and XGBoost using EEG/EOG data • Resilience and Robustness in Visible Light Positioning Systems: An introductory Approach
19.00	**Gala dinner** *Hôtel de la Reine, Place Stanislas, Nancy*

Friday June 17th, 2022 – Room 201, 2nd floor	
08.40-09.00	Registration
09.00-10.30	**Session 5: Energy issues** *Chairs*: Karl Andersson, Michel Kieffer • Energy-efficient transmission policies for the linear quadratic control of scalar systems • CANO: A lightweight CArbon emission and inhabitants' energy Needs Optimisation model • Energy-Efficient Routing for Cooperative Multi-AUV System
10.30-10.50	Coffee break
10.50-12.00	**Special session: EMJMD GENIAL thesis – Green networking** *Chair*: Jean-Philippe Georges
12.00-12.20	Closing ceremony
12.20-14.00	Lunch