From EULER Project

Events: USRR 2014

EINS NoE Workshop: Understanding the inter-play between sustainability, resilience, and robustness in networks (USRR)

URL: http://internet-science.eu/usrr14

Date: April 3, 2014 co-located with DRCN 2014 (April 1-3, 2014)

Location: Ghent, Belgium. http://www.drcn2014.org/

Call for Papers

Context:

The Network of Excellence in Internet Science (EINS, www.internet-science.eu) is an EU FP7-funded research project, aiming to strengthen scientific and technological excellence by developing an integrated and interdisciplinary scientific understanding of Internet networks and their co-evolution with society. Its main objective is to enable an open and productive dialogue between all disciplines which study Internet systems from any technological or humanistic perspective, and which in turn are being transformed by continuous advances in Internet functionality.

Motivation:

A fundamental question arises as how interdependent network systems can be modeled and designed to support unpredictable disturbance and unexpected changes when vulnerable to natural disasters, (un)voluntary disruptions, and malfunctions. Following the "fail-safe" strategy, sustainability focused traditionally on achieving durability, stability and practicing effective control of change and growth. Sustainability is nowadays considered over multiple time and space scales and relies on (adaptive) resource management processes implementing operational principles covering, e.g., conservation, diversification, restoration. Facing unpredictable disturbance and change, can lead to design systems by adopting instead a "safe-to-fail" strategy, i.e., by anticipating failures so that system response to perturbations are contained and minimized. The idea of disturbance away from and return to a stable state leads to design resilient systems focusing on (maintaining) efficiency of functions, constancy and predictability. Motivated by the need to design systems with a single operating objective, engineering resilience explores system behavior near a known equilibrium state to accommodate optimal designs. Hence, a system designed to support resilience still requires robustness -ability of a system to resist change without adapting its initial (stable) configuration- by means of decision methods that can produce actionable decisions in the face of uncertainty while seeking robust rather than optimal decisions. Indeed robust decision methods provide solution to problems that trade-off among different risks and multiple objectives when confronted to known unknowns whereas resiliency mechanisms aim at providing a means to deal with unknown unknowns.

Workshop Objective:

Understanding the interplay between sustainability, resilience and robustness becomes thus a critical question in technical system design as they exhibit many inter-dependencies which are complex to measure and model

but also lead to multi-objective decision problems.

Topics of interest include, but are not limited to:

- Case studies about natural disasters, (un)voluntary disruptions, malfunctions, failures, etc. in (inter-dependent) network infrastructure: what happened and what lead to the situation?
- Life cycle analysis of networks: is the use phase most energy consuming or is the production phase underestimated?
- Quantifying and evaluating the sustainability of (inter-dependent) networks
- Robust optimization of large-scale adaptive networks
- Increasing the robustness of (inter- dependent) networks: does it affect the sustainability?
- Robust and stochastic (adaptive) control for sustainable network systems design
- Energy-aware resilience
- Game theoretic and economic aspects of sustainability-vs-resilience trade-offs
- Extend robustness analysis towards a rigorous approach to resiliency analysis by e.g. capturing and representing system dynamics at multiple time scale, multiscale models and cross-interactions
- Life data analysis in inter-dependent networks: life stat. distributions, parametric and non-parametric methods, life data classification, competing failure modes analysis
- Robust optimization of resilient (inter-dependent) networks
- Robust decision methods in resilient networks

Abstract Submission:

We invite submission of abstracts of maximum 2 pages (written in English using single column format, 10pt font, single space, following the LNCS template) and including i) title, ii) name of authors (and co-authors), iii) email address, and iv) affiliation.

Abstracts shall be submitted in PDF form only until February 28, 2014.

USRR Workshop website: <http://internet-science.eu/usrr14>

Submission website: <https://www.easychair.org/conferences/?conf=usrr2014>

Abstract Review and Notification:

The submissions will be evaluated by the workshop program committee and a selection of abstracts will be admitted for presentation at the workshop. Workshop abstract review notification will be communicated to the corresponding author by March 7, 2014.

Important Dates:

- Submission Deadline: February 28, 2014 - Authors Notification: March 7, 2014 - Workshop Date: April 3, 2014

Registration to the Workshop:

Participants of DRCN do not need to register for participation. Others can register only for the USRR workshop by selecting the free EINS JRA7/JRA8 workshop registration option on the DRCN website <https://drcn2014.paydro.net/>.

Workshop Chairs and Program Committee:

Workshop Chairs:

- Dimitri Papadimitriou, (Alcatel-Lucent Bell Labs)
- Bart Lannoo, (iMinds, University of Ghent)

Technical Program Committee:

- Heiko Niedermayer, (Technische Universität München)
- Thomas Plagemann, (University of Oslo)