

Cyberinfrastructure Challenges in the Roaring Twenties

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Thursday January 30, 2025



How retirement looks like 😊

- Kings and Bishops, then and now!
- The Digital World is slowly becoming a dangerous place.
- The digital transformation of Data Intensive Science is in full swing.
- Cyber Infrastructure is essential for Industry, Science and Society
 - Guiding the UvA through the Digital Transformation
 - 20M for Data Science Center
 - New digital mission for the Library
 - Working closely with CISO and Rector on Secure and Sovereign CI
 - Chair of the IT for Research and member of related UvA Committee's
 - Deep conversations with leadership at NSF and DoE
 - Chair of CZ cyber infrastructure Scientific Advisory Board.

Activities with CIENA

- Work with CIENA to create a “learning by doing” track in OFC.
 - advise on a “Building Networks out of Components (BNC)” track in the technical program to get academia involved.
 - What can be reused from INDIS
- Work with CIENA at SC to demonstrate safe data infrastructures
 - Include the efforts in AMDEX.
- Work with CIENA on the application of relevant testbeds
 - persistent innovation engines for the research
 - relevant testbeds here are FABRIC, BRIDGES, SLICES-RI and 2Stick
 - upgrade CIENA testbed to Amsterdam

Current INDIS & DoE & NSF activities

- Contribution in team INDIS
 - Last year look at Integrated Research Infrastructure
 - This year HPDF large part of the theme
 - Testbeds integration with SCinet
- Continue engagement with FABRIC, get NRP involved
- Engage NSF, DoE on CI & AI and data strategy, relate to IRI
- See what HPDF is doing and gets in the picture (Library of Congress)
- Data / library vision & challenges - collecting vs collector
- Persistent vs working storage, incidental vs structural funding

Challenges ahead

- Knowledge safety (“kennisveiligheid”)
- Security – the attacks on our CI
- Cyber Infrastructure is not resilient wrt geopolitical changes
- The transformation of Science in the digital age
- The (in)dependence on big tech, plan a-b, exit strategies, etc.
- Sovereignty: **Be yourself in a digital world!**

This morning 5h00

session 3h45 – 5h15

30 PhD's

counting from 0

1988 :-)



Programmable Infrastructures for Secure Healthcare	Jamila Alsayed Kasseem
EFFECTIVE MOBILE FORENSICS THROUGH EXPLOITING THE MEMORY SECURITY	AYA FUKAMI
SECCONNET SMART AND SECURE CONTAINER NETWORKS FOR TRUSTED BIG DATA SHARING	SARA SHAKERI
Machine learning-based anomaly detection for radio telescopes	Michael Mesarcik University of Amsterdam
From Empowering to Motivating	Enhancing Policy Enforcement through Process Design and Incent Xin Zhou
Towards Effective Performance Diagnosis for Distributed Applications	Ruyue Xin
Enhancing Service-Level Agreements Using Decentralized Auctions and Witnesses	Zeshun Shi
A policy compliance detection architecture for data exchange infrastructures	Lu Zhang
Analysis and Prediction of GPU Graph Algorithm Performance	Merijn Verstraaten
EFFICIENT NEURAL ARCHITECTURES FOR EDGE DEVICES	
A DATA-CENTRIC APPROACH TOWARDS IDENTIFICATION AND PREDICTION OF ANOMALIES IN INDUSTRIAL CPS	URAZ ODYURT
Giulio Stramondo	MEMORY SYSTEM DESIGN FOR APPLICATION-SPECIFIC HARDWARE
Computational Trust Models for Collaborative Network Orchestration	Ameneh Deljoo
AUTOMATING NETWORK SECURITY	RALPH KONING
Seamless Infrastructure Programming and Control for Quality-critical Cloud Applications	Huan Zhou 周寰
Resource Scheduling for Quality-Critical Applications on Cloud Infrastructure	Yang Hu
Improving Application Timing Predictability and Caching Performance on Multi-Core Systems	JUN XIAO
Self-Adaptation for Energy Efficiency in Software Systems	Fahimeh Alizadeh Moghaddam
Virtual Internets	Marc X. Makkes
Access Control for On-demand Provisioned Cloud Infrastructure Services	Canh Trong Ngo
Data-centric Computing on Distributed Resources	Reginald Cushing
Energy-aware Information Modeling and Management for e-Infrastructures	Hao Zhu
Scenario-based Run-time Adaptive Multi-Processor System-on-Chip	Wei Quan
Multi-Domain Authorization for e-Infrastructures	Leon Commans
Rudolf Strijkers	INTERNET FACTORIES
Pruning Techniques for Multi-Objective System-Level Design Space Exploration	Roberta Piscitelli
★ THE CLUSTERED UNIVERSE ★	STEVEN RIEDER
Measuring and Predicting Anonymity	Matthijs R. Koot
A Semantic Model for Complex Computer Networks	Jeroen van der Ham
Framework for Path Finding in Multi-Layer Transport Networks	Freek Dijkstra
Strong and electromagnetic interactions in heavy exotic atoms	C. T. A. M. de Laat

Phd students after retirement

- dr. Jamila Alsayed Kassem, "Programmable Infrastructures for Secure Healthcare"
- dr. Aya Fukami, "Effective Mobile Forensics Through Exploiting the Memory Security"
- dr. Sara Shakeri, "SecConNet - Smart and Secure Container Networks for Trusted Big Data Sharing"
- dr. Michael Mesarcik, "Machine learning-based anomaly detection for radio telescopes"
- dr. Xin Zhou, "From Empowering to Motivating; Enhancing Policy Enforcement through Process Design and Incentive Implementation"
- dr. Ruyue Xin, "Towards Effective Performance Diagnosis for Distributed Applications"
- dr. Zeshun Shi, "Enhancing Service-Level Agreements Using Decentralized Auctions and Witnesses"
- dr. Lu Zhang, "A policy compliance detection architecture for data exchange infrastructures"
- dr. Merijn Verstraaten, "Analysis and Prediction of GPU Graph Algorithm Performance"
- dr. Dolly Sapra, "Efficient Neural Architectures for Edge Devices"





Candidate



Prof. dr. ir. C. de Laat



Uva Host



Audio



Video



Participants



Chat



React



Share



Meeting Info



Apps



More



Leave room



Conclusions, Info, Acknowledgements, Q&A

- Data hindered by risk of unexpected use, lack of trust
- Using market principles, enforcement and determining incentives and value in the data life cycle to make data flow
- More information & published papers:
 - <http://delaat.net/dl4ld> <http://delaat.net/epi> <http://delaat.net/sc>
 - <https://www.esciencecenter.nl/project/seconnet>
 - <https://towardsamdex.org> <https://upin-project.nl/>
 - Slides with help from: Reggie Cushing, Sara Shakeri, Lu Zhang, Leon Gommans, Xin Zhou, Thomas van Binsbergen and many others.

