

News and Research Highlights

ELLIIT Focus Period: Network Dynamics and Control, Fall 2023, Linköping



Organizers: Claudio Altafini, Emma Tegling, Giacomo, Ninna Stensgård, Trove Kvarnström

A central task in Network Science is to understand how to extrapolate emerging collective dynamical behaviors out of a large number of interacting

elementary entities. An even more challenging task is to move from a passive observation of the behavior of a network to an active way of controlling its dynamics. Both tasks require a system-level thinking, and can have profound repercussions across the many different domains of science in which networks are of relevance, such as biology, ecology, social sciences, economical sciences, and engineering. **More details:** <https://elliit.se/news-and-events/focus-period-linkoping-2023/>

ELLIIT Focus Period: 6G - forming a better future, Fall 2023, Lund



Organizers: Maria Kihl, Ove Edford, Fredrik Tufvesson, Erik G. Larsson, Elisabeth Ohlsson, Eva Westin

Research related to the 6th Generation Wireless Systems (6G) comprises a wide range of topics. This focus period took a broad perspective on

the possibilities and limitations of technology available and what services and applications can be provided by a future 6G system. Topics ranged from communication theory and fundamental limits via practical implementations to novel services and applications. The goal was to close the gaps between different research disciplines, increase synergy effects and, together, identify the most critical inter/intra-disciplinary research challenges, from a 6G perspective. What are the technical issues we have to address, from that perspective? What are the possible solutions, from a technical perspective? How should 6G be designed to, in the best way, contribute to solving global challenges? **More details:** <https://elliit.se/news-and-events/focus-period-lund-2023/>

ELLIIT Focus Period: Security and Fault Tolerance of Cyber-Physical Systems Spring 2024, Lund



*Organizers: Martina Maggio,
Mikael Asplund, Eva Westin*

In this focus period, the organizers wanted to plant the seed for a radical rethinking of the way cyber-physical systems are constructed, questioning

their fundamental principles and striving for constructions that are secure, safe, controllable, and dependable from the beginning. The focus period ran in Lund between April 1 and May 3. A number of international scholars interested in these research challenges were invited to participate, and to interact with leading scientists as well as ELLIIT researchers. In the third week (April 16-18) there was a 3-day symposium, with several invited top-level researchers.

More details: <https://elliit.se/news-and-events/focus-period-lund-2024/symposium/>

Upcoming ELLIIT Focus Periods 2024-2025

Topic	Period	Organizers	Organization
Machine Learning for Climate Science	Sep 23 - Oct 24, 2024, Linköping	Fredrik Lindsten, Michael Felsberg, Natascha Kljun, Johan Lindström, Larin Baardsen, Tove Kvarnström	Linköping University, Lund University
Visualization-Empowered Human-in-the-Loop Artificial Intelligence	Apr 28 - May 30, 2025, Linköping	Andreas Kerren, Katerina Vrotsou, Kostiantyn Kucher, Tove Kvarnström, Denise Wahlström	Linköping University
Robot Learning	Sep 15 - Oct 17, 2025, Lund	Yiannis Karayiannidis, Björn Olofsson, Erik Frisk, Volker Krueger, Eva Westin	Lund University, Linköping University

A Breakfast to Further Expand Collaborations, January 25, 2024, Linköping

On January 25th, ELLIIT representatives and associated researchers met with the local business community for breakfast with the Industry Forum and to kick off the Infrastructure Initiatives at LiU. The event took place in the research arena Visionen at Linköping University and involved presentations, demonstrations, and in-depth discussions about the four ELLIIT-financed infrastructures at the university, with Visionen itself being one of them.



During the presentations of the four ELLIIT-financed infrastructures based at Linköping University, the spectators were given a few project demonstrations. For example, an ELLIIT-financed student summer project in acrobatic drone flying successfully executed a full flip in the air – an action not typically designed for drones.

The four Infrastructure Initiatives presented were as follows:

- [Visionen 2.0](#)
- [Visualization Support and Consulting – Infrastructure, Software, and Competence](#)
- [AIOps: A scalable research platform for artificial intelligence](#)
- [ELLIIT Joint Autonomous Systems Lab at LiU and LU](#)

You can read more about all of the ELLIIT Infrastructure Initiatives [here](#).

ELLIIT Annual Workshop 2024, March 5-6, Lund

Organizers: Richard Pates, Björn Landfeldt

The ELLIIT Annual Workshop was successfully held at Lund University on March 7-8, 2024. Approximately 250 participants from ELLIIT's partner universities (LiU, LU, BTH, and HH), along with industrial partners and an array of invited guests, gathered for scientific discussions and networking. The two-day workshop featured a diverse array of engaging talks, mini-workshops, a poster session, keynote addresses, and ample opportunities for scientific discussions and social events aimed at fostering networking.

More details: <https://elliit.se/a-broad-view-of-projects-elliit-annual-workshop-2024/>.



Meet the new ELLIIT Recruited Faculty



Diana P. Moya Osorio joined the Department of Electrical Engineering at LiU in October 2023. She is currently Associate Professor at the Communication Systems Division (ISY). Previously, she was Senior Research Fellow and Adjunct Professor at the Centre for Wireless Communications, University of Oulu, Finland. She received the B.Sc. degree in electronics and telecommunications engineering from the Armed Forces University, Ecuador, in 2008, and the M.Sc. and D.Sc. degrees in electrical engineering with emphasis on telecommunications and telematics from the University of Campinas, Brazil, in 2011 and 2015, respectively. From 2015 to 2022, she was an Assistant Professor with the Department of Electrical Engineering, Federal University of São Carlos, Brazil. From 2020 to 2023, she was also a Postdoctoral Researcher for the Academy of Finland. **Research interests:** Her research interests include wireless communication systems in general, signal processing for wireless communications, physical layer security, and integrated sensing and communications.



Grzegorz J. Nalepa joined the School of Information Technology at HH in March 2024. He is currently Professor in Machine Learning at Center for Applied Intelligent Systems Research (CAISR). He is an engineer with degrees in computer science - artificial intelligence from AGH University and philosophy from Jagiellonian University in Poland. In 2016 he received a SENECA Foundation scholarship for a research stay in University of Murcia, Spain. In 2018 he received a prize for the outstanding monograph in computer science from the Polish Academy of Sciences. He has been involved in many research projects including R+D projects with companies, most recently in two EU projects related to the industrial applications of AI: CHIST-ERA PACMEL and XPM. He is currently a PI in the EU Horizon PEER project related to the human-centered AI (HAI). He was the organizing committee chair for the ECAI 2023 conference in Kraków Poland. **Research interests:** human-centered AI (HAI), applications of AI in industry, business, and healthcare, explainable AI (XAI), knowledge graphs, affective computing, context awareness, as well as intersection of AI with law.



Yonghao Xu joined the Department of Electrical Engineering at LiU in August 2023. He is currently an Assistant Professor in Machine Learning for Remote Sensing at the Computer Vision Laboratory (ISY). He received his B.S. and Ph.D. degrees in photogrammetry and remote sensing from Wuhan University, Wuhan, China, in 2016 and 2021, respectively. From 2021 to 2023, he was a Postdoctoral Researcher with the Institute of Advanced Research in Artificial Intelligence (IARAI), Austria. He was a recipient of the First Place

award in the IEEE Geoscience and Remote Sensing Society (GRSS) Data Fusion Contest in 2018. Since 2022, he has been working as the co-lead of the Benchmarking Working Group in the IEEE GRSS Image Analysis and Data Fusion Technical Committee. **Research interests:** His research interests include remote sensing, computer vision, and machine learning.



Xuesong Cai is a Docent (associate professor) at the department of electrical and information technology at Lund University, Sweden. He received his Ph.D. degree (with distinction) from Tongji University, Shanghai, China, in 2018. From 2018-2022, he conducted several postdoctoral stays at Aalborg University and Nokia Bell Labs, Denmark, and Lund University, Sweden. His work has led to over 66 peer-reviewed publications, 2 book chapters, and 4 granted patents. He was a recipient of the China National Scholarship (the highest honor for Ph.D. Candidates) in 2016, the Outstanding Doctorate Graduate awarded by the Shanghai Municipal Education Commission in 2018, the Marie Skłodowska-Curie Actions (MSCA) “Seal of Excellence” in 2019, the EU MSCA Fellowship (ranking top 1.2%, overall success rate 14%) and the Starting Grant (success rate 12%) funded by the Swedish Research Council in 2022. He was also selected by the “ZTE Blue Sword-Future Leaders Plan” in 2018 and the “Huawei Genius Youth Program” in 2021. He is an AP-S 2024 Young Professional Ambassador and serves as an Editor for IEEE Transactions on Vehicular Technology, IEEE Antennas and Wireless Propagation Letters, and IET Communications. **Research interests:** His research interests include radio propagation, high-resolution parameter estimation, and radio-based localization for 5G/B5G wireless systems.



Johannes Fichte joined the Department of Computer and Information Science (IDA) at LiU in 2023. He is an Associate Professor in Theoretical Computer Science in the Division of Artificial Intelligence and Integrated Computer Systems (AIICS). Johannes received his Masters' in Computer Science with a Minor in Physics from Humboldt-Universität zu Berlin and a Ph.D. in Computer Science from Technische Universität Wien. Since then, he has spent PostDocs at TU Wien, TU Dresden, and UC Berkeley. Before joining LiU, he was a lecturer at TU Wien Research Unit on Artificial Intelligence and Databases. Johannes has industry experience in data analytics, anonymization in health care, and the authenticity of data and digital identities. He was the Organization Chair of IJCAI-ECAI 2022 and has co-organized the annual competition and workshop on model counting since 2020. **Research interests:** His research is in computational algorithmics, complexity, and practical applications thereof, including implementations of parameterized algorithms for various combinatorial hard problems. He has a particular interest in model counting of propositional formulas and for various formalisms in AI, the Boolean satisfiability problem (SAT), and answer-set programming (ASP).



Andrés Alayón Glazunov joined the Department of Science and Technology (ITN) at Linköping University (LiU) in 2023, where he serves as a Senior Associate Professor specializing in Radio Systems within the Division of Physics, Electronics, and Mathematics (FEM) at the Norrköping campus. He earned his Docent (Habilitation) qualification in Antenna Systems from Chalmers University of Technology in Sweden in 2017 and received his Ph.D. in Radio Systems from Lund University, Sweden, in 2009. He obtained a Master of Science in Physical Engineering from Peter the Great St. Petersburg Polytechnic University, Russia, in 1994. Currently, Dr.

Alayón Glazunov is also a Guest Associate Professor at the University of Twente in the Netherlands. His professional career spans from 1996 to 2005, during which he held various research and specialist roles at prominent companies in the telecom industry, including Ericsson Research and TeliaSonera in Stockholm, Sweden. He has significantly contributed to the field of antenna-channel interactions through his involvement as the Swedish Delegate for the European Cost Action 273 from 2001 to 2005 and as the Dutch Delegate for the European Cost Action IRACON from 2018 to 2020. Dr. Alayón Glazunov is renowned for pioneering standardized over-the-air (OTA) measurement techniques for 3GPP and developing innovative OTA methods such as the random-line-of-sight (LOS) and hybrid antenna characterization setups. His contributions to European research projects under the H2020-MSCA European Research and Innovation Program include initiatives like is3DMIMO, WAVECOMBE, 5VC, and Build-Wise. He has also played a vital role in the international 3GPP and ITU standardization bodies. Between 2009 and 2010, he held an MSCA Research Fellowship at the Centre for Wireless Network Design at the University of Bedfordshire, UK. Following this, he was a postdoctoral researcher at the Electromagnetic Engineering Laboratory of KTH-Royal Institute of Technology in Stockholm from 2010 to 2014. He then served as an Assistant Professor at Chalmers University of Technology from 2014 to 2018, and later until 2024 as an Affiliate Professor and an Associate Professor at the University of Twente's Department of Electrical Engineering from 2018 to 2023. **Research interests:** Dr. Alayón Glazunov's research focuses on the design and characterization of smart devices and environments for communications, localization, and radar systems, particularly through the use of multiple antenna and scatterer systems.

See all recruited faculty here: <https://elliit.se/people/>

Gender & Diversity

New Projects

Seven projects at LU, LiU and BTH received funding as part of the Spring 2024 call for Gender & Diversity project proposals. The autumn call is expected to have its deadline at the end of August.

#	Applicants	Proposed Activity	Budget
1.	Onur Günlü et al.	"Gender & Diversity in Information Theory" External researcher visiting both LiU and LU	LiU 49 500 SEK LU 49 500 SEK
2.	Ilayda Yaman et al.	PhD student research stay at University of Michigan	LU 60 000 SEK
3.	Sara Maad Sasane Charlotta Nilsson	"Matematiksamarbete med skola i glesbygd"	LU 63 500 SEK
4.	Margret Bauer Charlotta Johnsson Eva Westin	"The future of control engineering – a female perspective" Interviews with women in control engineering	LU 60 000 SEK
5.	Usman Nasir	"Blekingflickan Code Club"	BTH 14 000 SEK
6.	Anitha Thillaisundaram	Attending/organizing events for women in mathematics	LU 50 000 SEK
7.	Tom Ziemke	Postdoc research stay in Montreal and Toronto	LiU 40 000 SEK

New Online Seminar Series

The ELLIIT Gender & Diversity group started a new online seminar series on gender and diversity issues in technology research, aiming for 2-3 seminars per term. The first two speakers were Katie Winkle from Uppsala University, who talked about "Social Robot Identity Performance: Risks and Opportunities" (May 17) and David Vernon from Carnegie Mellon University Rwanda, who talked about "An African Perspective on Culturally Competent Social Robotics: Why DEI Matters in HRI" (May 24).

Research Highlights

Initial version of APyTypes released

Oscar Gustafsson, LiU/ISY.

The Python package for finite word length simulation, APyTypes, is available for installation through PyPi (`pip install apytypes`). The package supports bit-exact computations of both floating-point and fixed-point scalars and arrays with configurable word length. Think of it as NumPy, but with fully custom data types with full control of the behavior (rounding/overflow). More information can be found at <https://apytypes.github.io/>.

Surfer 0.2 released

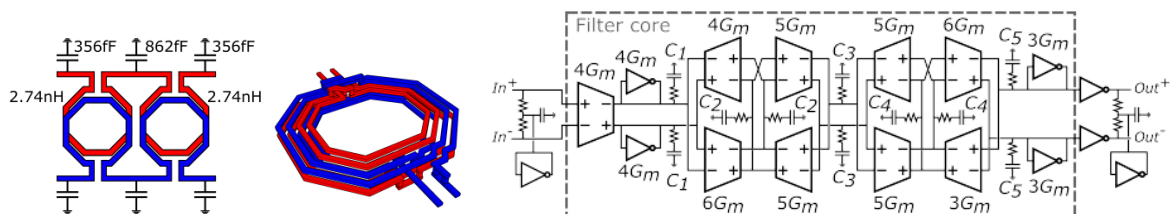
Oscar Gustafsson, LiU/ISY.

The second version of the cross platform open source waveform viewer Surfer has been released. Surfer runs on Linux, Windows, Mac, and in the browser (and there is a VS Code plugin) and is used to visualize simulation results from digital designs. The viewer has been gaining traction for its ability to include data types for custom HDLs, like Amaranth, Chisel, and Spade. As the custom HDLs are converted to, e.g., Verilog for simulation and synthesis, type information is usually lost, but Surfer has support to recreate it in the viewer. For more information about Surfer, see <https://surfer-project.org/> (the “screen shot” is a runnable instance, so easy to try), and for information about what is new in 0.2, see <https://blog.surfer-project.org/v0-2-0/>.

Multi-GHz bandwidth analog baseband filters for 6G

Rikard Gannedahl, LU/EIT, Ph.D. thesis defended on May 30. Main supervisor: Prof. Henrik Sjöland.

Multi-GHz analog baseband filters for 6G transceivers have been designed in 22nm FD-SOI CMOS technology. The baseband filters have 5GHz bandwidth, making them suitable for 10GHz transceiver RF bandwidth that can be used in future sub-THz 6G systems operating above 100GHz. The fabricated test chips contain both state-of-the-art active filters and novel compact passive filters, to facilitate comparisons. The passive filters occupy similar areas as the active filters, but have superior performance in terms of noise, linearity and power consumption. It has also been shown in simulations how the passive filters can be modified to achieve a very high stopband attenuation over a wide frequency range, using capacitance connected to taps in the passive filter inductors. The performance demonstrated in this work indicates that there may be an upcoming change in how filters are implemented in transceivers for wideband systems like 6G, from active filters to passive.



Left: Passive filter (simplified). **Middle:** 3D view of the inductors. **Right:** Active filter

Several papers at the highest impact conference

Michael Felsberg, LiU/ISY

The IEEE/CVF Conference on Computer Vision and Pattern Recognition is the conference with highest impact according to https://scholar.google.com/citations?view_op=top_venues. ELLIIT is well represented with, among others, 4 papers from CVL (2 by the ELLIIT PhD student Johan Edstedt). The papers will be presented during the Midsummer week, all papers are listed on <https://cvpr.thecvf.com/Conferences/2024/AcceptedPapers>.

Invited Talks

- Xuesong Cai, IEEE Antennas and Propagation Society (AP-S) Ambassador Talk, “High-resolution parameter estimation for radio channels”, 2024.
- Xuesong Cai, IEEE Antennas and Propagation Society (AP-S) Ambassador Talk, “Dynamic Millimeter-Wave Channel Characterization-Design, Implementation and Measurements”, 2024.
- Erik G. Larsson, LiU/ISY, keynote "Next-Generation MIMO and the New Applications it Enables" ITG WSA/SCC, 2023.
- Erik G. Larsson, LiU/ISY, "Rethinking wireless repeaters", IEEE Communication Theory Workshop, Banff, May 2024.
- Elina Rönnberg, Keynote speaker at The 21st International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research.
- Elina Rönnberg, Plenary speaker at A Workshop to Celebrate the 100th Birthday of Jacques Benders.
- Fredrik Lindsten, LiU/IDA, invited talk on “Sequential Monte Carlo guidance of (discrete) diffusion models” at the 6th Workshop on Sequential Monte Carlo Methods, Edinburgh, May 2024.
- Fredrik Lindsten, LiU/IDA, invited lecturer on “Particle Markov Chain Monte Carlo” at the Summer School on Bayesian filtering: fundamental theory and numerical methods, Edinburgh, May 2024.
- Fredrik Lindsten, LiU/IDA, invited talk on “Self-supervised representation learning by clustering in latent space” at the 29th Nordic Conference in Mathematical Statistics (NORDSTAT), June 2023.
- Onur Günlü (with Amin Gohari and Gerhard Kramer), LiU/ISY, tutorial on “On a Measure of Private Common Information and Secret Key Agreement,” Seminar on Algorithmic Aspects of Information Theory”, Montpellier, France, January 2024.
- Viktor Larsson, LU, invited lecturer on “Structure-from-Motion” at the Robotics, Perception and Learning summer school, June 2024.
- Zheng Chen, LiU/ISY, invited talk on “Over-the-Air Computation for Distributed Systems: Something Old and Something New”, at the 11th Nordic Workshop on System and Network Optimization for Wireless (SNOW), Finland, April 2024.
- Nikolaos Pappas, LiU/IDA, Tutorials:
 - IFIP/IEEE Networking 2024: From Information Freshness to Semantics of Information and Goal-oriented Communications.
 - IEEE GLOBECOM 2023: Task-oriented and Semantics-aware Communications and Networking for 6G.
 - NetSys 2023: Age of information (AoI) - A new performance metric for measuring freshness of information.
 - IEEE ICC 2023: Task-oriented and Semantic-aware Communications and Networking for 6G.
 - IEEE WCNC 2023: Task-oriented communications and networks.

- Nikolaos Pappas, LiU/IDA, Invited talks/Plenaries:
 - American University of Beirut (AUB) Talks Semantic Communications, April 2024.
 - 11th Nordic Workshop on System and Network Optimization for Wireless (SNOW), Finland, April 2024.
 - Invited talk on “Semantics and Goal-oriented Communications” at Yonsei University, Seoul, Korea, April 2024.
 - Keynote at “Goal Oriented and Semantic Communications”, GDR, CNRS, Paris, Nov. 2023.
 - Invited talk on Semantics of Information at the A* Institute for Infocomm Research (I2R), August 2023.
 - Webinar on Semantics of Information at the IEEE ITS Chapter, Bangalore Section, India, July 2023.
 - Keynote talk “From Information Freshness to Semantics of Information and Goal-oriented Communications”, at the International Workshop on Learning and Information Theory (WOLIT’23), Hong Kong, July 2023.
 - Keynote talk “From the age of information to data importance and relevance”, at the IEEE ICASSP 2023 workshop on “6G Ubiquitous Space Ground Integrated Communications”, Rhodos, June 2023.
- Michael Felsberg, LiU/ISY, will give a keynote at NORDTEK 2024 in Finland.
- Tom Ziemke (LiU/IDA), gave the keynote “Time to move on – AI and cognitive science need a divorce” at the 2023 Artificial General Intelligence conference (AGI 2023), Stockholm, June 2023.
- Tom Ziemke (LiU/IDA) gave an invited lecture on “Mental State Attribution to Robots” as part of a PhD course at University of Milano-Bicocca, Italy, April 2024.
- Tom Ziemke (LiU/IDA) gave an invited talk on “Robot Embodiment and Intentionality” at the workshop “Machines in Thoughts”, held in Bologna, May 2024.
- Tom Ziemke (LiU/IDA), invited keynote lecture on embodiment theory at the WASP summer school on Embodied AI, Örebro, 24-27 June 2024.
- Tom Ziemke (LiU/IDA), invited talk on “Ironies of Social Robotics” at the workshop “Rethinking (Human) Bodies in HRI: Embodied Interactions Every Day”, as part of the conference “Robophilosophy 2024 - Social Robots With AI: Prospects, Risks, and Responsible Methods”, Aarhus, Denmark, August 2024.
- Andreas Kerren (LiU/ITN) gave an invited talk entitled “Visualization Perspectives in Explainable and Trustworthy Machine Learning” at the PacificVis 2023 Visualization Meets AI Workshop ([VisMeetsAI '23](#)), Seoul, Korea, April 18, 2023.

Awards and Appointments

- An “old” overview paper on massive MIMO written by ELLIIT researchers (Fredrik Rusek, Daniel Persson, Buon Kiong Lau, Erik G. Larsson, Ove Edfors and Fredrik Tufvesson, some of whom are no longer with ELLIIT) received the 2023 IEEE SPS Donald G. Fink Overview Paper Award at the 2024 International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2024), the annual flagship conference organized by IEEE Signal Processing Society. The Donald G. Fink Overview Paper Award honors the author(s) of a journal article of broad interest that has had substantial impact over several years on a subject related to the Society’s technical scope. A paper considered for the award should present an overview of a method or theory with technical depth and application perspective. It should have a multiyear record of impact and also be relevant to current researchers and/or practitioners.



- Buon Kiong Lau, LU/EIT, was elected as an Administrative Committee (AdCom) Member of the IEEE Antennas and Propagation Society for the 3 year term of 2024-2026.
- Erik G. Larsson, LiU/ISY, named highly cited researcher 2023 according to ISI Web of Science.
- Erik G. Larsson, LiU/ISY, awarded extension of Wallenberg Scholar grant.
- Zheng Chen (ELLIIT Recruited faculty), LiU/ISY, appointed Docent and Associate Professor
- Viktor Larsson, LU, with co-authors was awarded Best Paper, Honorable Mention at the International Conference for 3D Vision 2024 in Davos, Switzerland, for the paper “NICER-SLAM: Neural Implicit Scene Encoding for RGB SLAM”.
- Nikolaos Pappas, LiU/IDA, elected as Vice-chair for the IEEE Tactile Internet Technical Committee.
- Nikolaos Pappas, LiU/IDA, “Goal-Oriented Transport Layer Protocols for Wireless Control” has been selected for the Best Demo Award in IEEE SECON 2023. In collaboration with Prof. Kellerer and his group in TUM, Germany. We propose a novel relevance- and network-aware transport layer (TL) scheme for WNCSSs. Moreover, we propose a mechanism for the scheme

parameters adaptation in dynamic scenarios with unknown network statistics. *Our method prevents network congestion while keeping the control performance high.* We argue that relevance- and network-awareness are critical components of network protocol design to avoid control performance degradation in practice.



- Elina Rönnerberg, LiU, Institute of Technology teacher award at Linköping University.
- Onur Günlü, LiU/ISY, appointed as a Docent in Information Theory.
- Onur Günlü, LiU/ISY, elected as a board member of the IEEE Sweden Vehicular Technology (VT) / Communications (COM) / Information Theory (IT) Joint Chapter for 2024-2025.
- Diana Osorio was appointed as working group leader at Cost Action 6G-PHYSEC 2023-2027.
- Umar Iftikhar, BTH, Nauman bin Ali, Jürgen Börstler and Muhammad Usman were awarded the best technical research paper award for the paper titled: “A catalog of source code metrics – a tertiary study” at the 2023 Software Quality Days conference.
- Franziska Babel was awarded the “Südwestmetall-Förderpreis 2024” for her PhD dissertation “Derivation and Evaluation of Psychological Conflict Resolution Strategies for Autonomous Service Robots”.
- Franziska Babel, Sam Thellman and Tom Ziemke received the best poster award at the 11th International Conference on Human-Agent Interaction (HAI 2023) for the paper “Cyclists’ Perception of Automated Shuttle Buses in Shared Spaces”.
- Georg Bökman, Johan Edstedt, Michael Felsberg, and Fredrik Kahl received the paper award at SSBA 2024 <https://ssba.org.se/ssba2024/index.html>
- Xuesong Cai (ELLIIT Recruited faculty) was appointed Docent at Lund University
- Xuesong Cai was selected as a Young Professional ambassador of IEEE Antennas and Propagation Society.
- Xuesong Cai was selected as a member of the propagation committee of IEEE Vehicular Technology Society.
- Xuesong Cai was elevated to an IEEE Senior Member.

Program Chairs and Editorships

- Michael Doggett, LU/CS, is the new Editor-in-Chief for the journal Proceedings of the ACM on Computer Graphics and Interactive Techniques (<https://dl.acm.org/journal/pacmkgit>), from May 2024 to May 2027.
- Zheng Chen, LiU/ISY, appointed Associate Editor for the IEEE Transactions on Communications, 2024.
- Zheng Chen, LiU/ISY, appointed Associate Editor for the IEEE Transactions on Wireless Communications, 2024.
- Erik G. Larsson, LiU/ISY, co-edited special issue on “Signal processing for XR communications and systems,” for the IEEE Journal on Selected Topics in Signal Processing, 2023.
- Fredrik Lindsten, LiU/IDA, Senior Associate Editor of the ACM Transactions on Probabilistic Machine Learning.
- Onur Günlü, LiU/ISY, appointed as an Associate Editor of the IEEE Transactions on Communications for 2023-2026.
- Onur Günlü, LiU/ISY, Technical Program chair for the 2023 IEEE Global Communications Conference (GLOBECOM) - Main Symposium on Communication and Information System Security, Kuala Lumpur, Malaysia, 2023.
- Onur Günlü, LiU/ISY, Exhibition Chair for the 2024 International ITG Workshop on Smart Antennas (WSA), Dresden, Germany, 2024.
- Diana Osorio, LiU/ISY, appointed Associate Editor for IEEE Wireless Communication Letters and IEEE Transactions on Information Forensics and Security, 2023.
- Nikolaos Pappas, LiU/IDA, guest editorials:
 - IEEE Internet of Things Magazine, Special Issue on “Task-Oriented Communications and Networking for the Internet of Things (IoT)”.
 - IEEE Network, Special Issue on “Tactile Internet for a Cyber-Physical Continuum”.
 - Entropy Journal, Special Issue on “Foundations of Goal-Oriented Semantic Communication in Intelligent Networks”.
 - Leading Guest Editor, IEEE Network, Special Issue on “Goal-oriented Semantic Communication and Networking”.
 - Leading Guest Editor, IEEE/KICS JCN, Special Issue on “Festschrift in Honor of Prof. Anthony Ephremides' 80th birthday: A journey from age of information to semantics of information”.
- Michael Felsberg, LiU/ISY has been appointed as Area Chair at NeurIPS 2024.
- Xuesong Cai was appointed as an associate editor for IEEE Transactions on Vehicular Technology.
- Xuesong Cai was appointed as an associate editor for IEEE Antennas and Wireless Propagation Letters.
- Tom Ziemke was program co-chair for the 2024 IEEE Conference on Cognitive and Computational Aspects of Situation Management (CogSIMA), held in Montreal, Canada, May 2024

- Adrian Pop, LiU/IDA, was program chair for the 16th OpenModelica Annual Workshop, Linköping, Sweden, February 2024.
- Andreas Kerren, LiU/ITN, served as Most Influential Paper Award co-chair of the 11th IEEE Working Conference on Software Visualization [VISSOFT 2023](#), Bogotá, Colombia, 2023.
- Andreas Kerren, LiU/ITN, has been appointed as a State-of-the-Art (STAR) track co-chair at [EuroVis 2024](#), which will take place in Odense, Denmark during 27–31 May, 2024.
- Andreas Kerren, LiU/ITN, is co-editor of a special issue on [Visualizing the Unseen Characteristics of Machine Learning Models](#) of the journal Frontiers in Computer Science / Computer Graphics and Visualization section.

PhD and Licentiate Theses

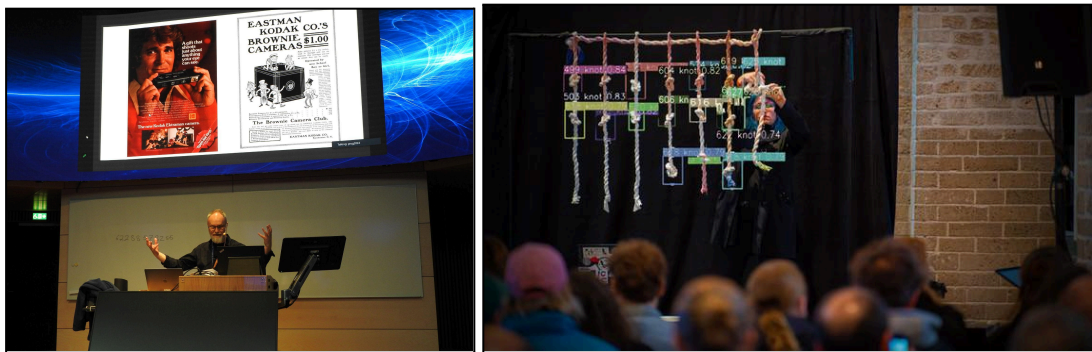
- Sofia Thunberg, LiU/IDA, defended her PhD thesis “Companion Robots for Older Adults: A Mixed-Methods Approach to Deployments in Care Homes”, June 14, 2024, Linköping University. Main supervisor: Tom Ziemke.
- Rodrigo Saar de Moraes, LiU, defended his PhD thesis “Exploring Trade-offs in Concept Design of Integrated Modular Avionic Platform Configurations: Topology Generation, Resource Adequacy, and Dependability”, June 5, 2024, Linköping University. Main Supervisor: Prof. Simin Nadjm-Tehrani. [Link to thesis](#).
- Rikard Gannedahl, LU/EIT, defended his PhD thesis “Frequency Generation and Baseband Filters for mm-Wave 5G and 6G Transceivers”, May 2024. Main supervisor: Henrik Sjöland.
- Qiuyan Liang, LU/EIT, defended her PhD thesis “Low Complexity Multiband and Beam-Reconfigurable Antennas for Beyond 5G Communications”, March 2023. Main supervisor: Buon Kiong Lau.
- Hanieh Aliakbari, LU/EIT, defended her PhD thesis “Antenna System Design for 5G and Beyond – A Modal Approach” in June 2023. Main supervisor: Buon Kiong Lau.
- Ziya Gülgün, LiU/ISY, defended his PhD thesis “GNSS and Massive MIMO: Spoofing, Jamming and Robust Receiver Design for Impulsive Noise”, May 2023.
- Sergio Rico, LU/CS, defended his PhD thesis “Building Stronger Bridges: Strategies for Improving Communication and Collaboration Between Industry and Academia in Software Engineering” on June 16, 2023: Supervisors: Martin Höst and Emelie Engström.
- Woodrow Hao Chi Kiang, LiU/IDA, presented his Licentiate thesis, “Uncertainty Estimation in Models of Multivariate Trait Evolution on Given Phylogenies”, April 2023. Main supervisor: Krzysztof Bartoszek.
- Shailesh Pratab Singh, BTH, defended his Licentiate thesis, “System Architectures and Trade-offs for an Internet of Things Network”, September 2023. Supervisors: Lars Lundberg and Nauman bin Ali.
- Umar Iftikhar, BTH, defended his Licentiate thesis, “Towards Measuring & Improving Source Code Quality”, April, 2024. Supervisors: Nauman bin Ali, Jürgen Börstler and Muhammad Usman.
- Alan McCabe, LU/CS, defended his licentiate thesis “Towards the Humanisation of Programming Tool Interaction”, August 2023. Main supervisor: Emma Söderberg. Co-supervisor: Görel Hedin.

- Peng Kuang, LU/CS, defended their Licentiate thesis “Toward Gaze-enabled Programming Tool Assistance”, April 2024. Main supervisor: Emma Söderberg. Co-supervisors: Martin Höst and Diederick Niehorster.
- Alachew Mengist, LiU/IDA, defended his PhD thesis “Model-Based Tool Integration and Ontology-Driven Traceability in Model-Based Development Environments”, June 1, 2023. Main supervisor: Adrian Pop. [Link to thesis](#).

Organized Conferences and Workshops

- Viktor Larsson co-organized tutorials on “*Camera Geometry Problems in Computer Vision*” at the International Conference on Computer Vision (ICCV) 2023 in Paris, and at the International Conference on 3D Vision (3DV) 2024 in Davos.
- Onur Günlü, LiU/ISY, Special Session Organizer, on “Software, Algorithms and Trust” at the ELLIIT Annual Workshop, Lund, Sweden, 2024.
- Diana Osorio organized the “Joint 6G-PHYSEC & INTERACT Workshop on 6G technologies and PHY layer security,” Helsinki, June 2024.
- Henry Edison organized the “Advances in Software Intensive Software Workshop”, Bolzano, June 2024.
- Acted as a moderator for the round-table discussions at Cybernode April 2024 at Cybercampus. The theme of the discussion was: Incentives for resilient critical infrastructures and their importance for the innovation ecosystem.
- Nikolaos Pappas, LiU/IDA, chair/co-chair Special sessions/Workshops:
 - ACM Mobihoc 2024 Workshop on Age and Semantics of Information.
 - WiOpt 2024 Workshop on Machine Learning in Wireless Communications (WMLC).
 - IEEE INFOCOM 2024 Workshop on Age and Semantics of Information.
 - IEEE VTC 2024 Spring Workshop on Real-Time Communications toward 6G (WRTC).
 - IEEE ICASSP 2024 Workshop on Timely and Private Machine Learning over Networks.
 - IEEE WCNC 2024 Workshop on Timely and Private Machine Learning over Networks.
 - IEEE SPAWC 2023 Special Session on Timely and Private Machine Learning over Networks.
 - IEEE SECON 2023 Workshop on Distributed, Private, and Robust Machine Learning over Networks.
 - IEEE ICASSP 2023 Workshop on Timely and Private Machine Learning over Networks.
 - IEEE ICC 2023 Workshop on Beyond URLLC: Research Trends and Open Challenges in Real-Time IoT toward 6G (BUW-6G).
- Zheng Chen, LiU/ISY, co-chair of workshops and special sessions including
 - 2023 IEEE GLOBECOM, workshop on “Wireless Communications for Distributed Intelligence”.

- 2023 IEEE Asilomar Conference on Signals, Systems, and Computers, special session on “Fast, Secure and Reliable Over-the-Air Aggregation”.
- 2024 IEEE ICASSP, special session on “Decentralized Learning with Resource-Constrained Communication”.
- Emma Söderberg and Luke Church, LU/CS, were general chairs for the 34th Annual Meeting of the Psychology of Programming Interest Group (PPIG’24, <https://www.ppig.org/workshops/2023-annual-workshop/>) held in Lund in August 2023.
- Emma Söderberg and Luke Church, LU/CS, were general chairs for the 8th International Conference on the Art, Science, and Engineering of Programming (<Programming>’24, <https://2024.programming-conference.org/>) held in Lund in March 2024.



- Farnaz Adib Yaghmaie, LiU/ISY, Special Session Organizer, on “Processes and Automation” at the ELLIIT Annual Workshop, Lund, Sweden, 2024.
- Franziska Babel, Philipp Hock, Sam Thellman and Tom Ziemke organized the workshop “Cars As Social Agents (CarSA): A Perspective Shift in Human–Vehicle Interaction” at the 11th International Conference on Human-Agent Interaction (HAI 2023) in December 2023.
- Franziska Babel, Hannah Pelikan, Sam Thellman and Tom Ziemke organize the “2nd Workshop on Cars As Social Agents (CarSA): Interdisciplinary Perspectives on Human–Vehicle Interaction” at the Nordic Conference on Human-Computer Interaction (NordiCHI) in October 2024.
- Adrian Pop and Martin Sjölund organized the 16th OpenModelica Annual Workshop, February 5, 2024, Linköping, Sweden.
- Andreas Kerren, Katerina Vrotsou, and Kostiantyn Kucher (all LiU/ITN) will organize an ELLIIT Focus Period entitled "[Visualization-Empowered Human-in-the-Loop Artificial Intelligence](#)" in Norrköping, April/May 2025. The focus period will provide an opportunity to foster discussion on visual analytics in relation to (X)AI, including human-in-the-loop AI/ML, by inviting younger as well as senior international researchers for a stay at MIT/LiU as well as organizing a 3-day symposium on this topic.

Personnel

- Prof. Mark Dougherty, representative for Halmstad University in the ELLIIT programme group, will start a new position from 1st August 2024 as Dean for postgraduate education and research at Arcada University of Applied Sciences, Helsinki.
- Dr. Mohd. Tasleem Khan, formerly ELLIIT-funded post-doc at Division of Computer Engineering, ISY, Linköping University, left in February 2024 to join Heriot-Watt University, Edinburgh, for a tenure track position.
- Jiawang Li, LU/EIT, started at LU in October 2023 as a ELLIIT PhD student, to work for the the ELLIIT Call D Project “Efficient Mid-range Wireless Power Transfer with Intelligent Surfaces (EMPTIS)”. The PI and co-PI of the project are Buon Kiong Lau (LU/EIT) and Alireza Saberkari (LiU/ISY).
- Flavius Gruian, Assoc. Prof. LU/CS, took over as co-PI at LU/CS for project C05: GPAI - General Purpose AI Computing. The change is in effect from May 2024 and is intended as a replacement for Jörn Janneck, who is no longer with LU.
- Theodor Lindberg started at LiU in September 2023 as an ELLIIT PhD student to work for the Call D project “ACRE - Approximate Computing Reducing Energy”. The PI and co-PI of the project are Oscar Gustafsson (LiU/ISY) and Joachim Rodrigues (LU/EIT).
- Joel Nyholm started at HH in January 2024 as an ELLIIT PhD student working on the Call D project D12 “Static Analysis of Energy Usage in Software”. The PI and co-PI of the project are Wojciech Mostowski (HH) and Christoph Reichenbach (LU).
- Samuel Matthiesen started at LiU/IDA as an ELLIIT Postdoc working together with ELLIIT Recruited Faculty Fredrik Lindsten.
- Dong Qian started at LiU/IDA as an ELLIIT Postdoc working together with ELLIIT Recruited Faculty Fredrik Lindsten.
- Gustaf Åhlgren started at LiU/ISY in the Information Coding Division (ICG) as a Ph.D. student to work on Information-theoretic Security and Privacy for Future Systems. Supervisor is ELLIIT Recruited Faculty Onur Günlü.
- Ludvig Dillén started at LU in November 2023 as an ELLIIT PhD student to work on the Call D project “Revisiting Data-associations in Large-Scale Mapping”.
- Mario Simaremare started at BTH in November 2023 as an ELLIIT PhD student to work on leveraging generative AI to support experimentation in software startups.
- Jinyi Wang started at LiU/ITN in August 2023 as an ELLIIT PhD student in the Call D project D4 entitled “Visual Analytics of Large and Complex Multilayer Technological Networks” with Andreas Kerren (iVis Group at MIT) and Richard Pates (LU/Automatic Control) as PI and co-PI of the project.

Research Grants

- Nikolaos Pappas, LiU/IDA, “ROBUST-6G - SmaRt, AutOmed, and ReliaBle SecUrity Service PlaTform for 6G”, HORIZON-JU-SNS-2023-STREAM-B-01-04 - Reliable Services and Smart Security, 2023.
- Nikolaos Pappas, LiU/IDA, “SOVEREIGN - distributed ledger technologies and user-driven automation towards self-sovereign mobile data access beyond 5G networks”, HORIZON-MSCA-2022-SE-01, 2023.
- Nikolaos Pappas, LiU/IDA, “ELIXIRION - rEaLizing healthcare 4.0 eXploIting the 6G netwoRk evolutiON”, HORIZON-MSCA-2022-DN-01-01, 2023.
- Nikolaos Pappas, LiU/IDA, “6G-PHYSEC - Physical layer security for trustworthy and resilient 6G systems”, COST Action, 2023.
- Nauman bin Ali, BTH, new KKS (the Knowledge foundation) project grant, “GIST – Gaining actionable Insights in Software Testing”, 2023.
- Diana Osorio, ELLIIT recruited faculty at LiU/ISY, wins new WASP project grant, "ALERT: eArLy warning systEms for dRone detection based on disTributed integrated sensing and communication", 2024.
- Erik G. Larsson, LiU/ISY, new VR (Swedish Research Council) project grant, 2023.
- Viktor Larsson, LU, new VR (Swedish Research Council) starting grant, 2023.
- Viktor Larsson, LU, new WASP Academic PhD grant, 2024.
- Elina Rönnberg, LiU, WASP Academic PhD student project, 2024.
- Onur Günlü, LiU/ISY, Transport Area of Advance (AoAT) Research Fund, 2023.
- Markus Borg and Emma Söderberg, LU, WASP Academic PhD student project, 2024.
- Michael Doggett and Volker Krueger, LU, WASP Academic PhD student project, 2024.
- Simin Nadjm-Tehrani, LiU, started a WASP NEST project on the theme of cybersecurity in April 2024. AIR2: AI for Attack Identification, Response and Recovery, will run over 5 years in collaboration with Assoc. Prof. Jendrik Seipp (LiU/IDA), Rolf Stadler (KTH), and Monowar Bhuyan (Umeå university).
- Fredrik Lindsten, LiU/IDA, WASP Academic PhD student project, 2024.
- Fredrik Lindsten, LiU/IDA, WASP-WISE pre-project, 2024. Together with Rickard Armiento, LiU/IFM.
- Yonghao Xu, LiU/ISY, Vinnova Project on "Community driven approach to 3D hyperspectral AI for universal biodiversity classification", 2023.
- Yonghao Xu, LiU/ISY, Zenith Project on "Multimodal remote sensing for climate monitoring", 2024.
- Yonghao Xu, LiU/ISY, WASP Research Arenas Validation Project on "Real-time autonomous wildfire detection system with dual-camera AI", 2024. Together with Michael Felsberg, LiU/ISY.
- Elina Rönnberg LiU/MAI, Soheil Samii, LiU/IDA, “Resource Allocation and Scheduling for Future Avionic Systems,” Vinnova NFFP8, 2024. Project will run over 4 years with SAAB as the project leader.

New Courses

- Complex networks for engineering mathematics students (TSKS34), LiU, Spring 2024.
- PhD Course in “*Advanced Topics in Learning-based Computer Vision*”, LU, Fall 2024.
- PhD Course on “Information Theory”, LiU/ISY, Fall 2023 - Spring 2024, by Onur Günlü.
- MSc Course “Information and Communications Engineering” (TSKS35) at LiU, Fall 2024.
- PhD Course “Stochastic Processes”, Spring 2024, by Krzysztof Bartoszek.
- MSc Course, “*Deep Learning*” (TDDE70), LiU, Spring 2024.
- BSc Course, “*Machine Learning, basic course*” (TDDE69), LiU, Fall 2024.
- BSc Course “Scientific Theory for Engineers” (EDAG10), LU, Spring 2024.
- PhD Course “Reinforcement Learning”, Fall 2024, by Farnaz Adib Yaghmaie.
- PhD Course “AI Fundamentals & Limitations”, by Tom Ziemke (LiU/IDA) for WASP-HS, Spring 2024.
- PhD Course “AI & Robot Ethics”, by Tom Ziemke (LiU/IDA), Fall 2024.

Outreach Activities

- Onur Günlü, LiU/ISY, organized outreach activities as a part of the IEEE Information Theory Society’s Diversity and Inclusion Committee and Student and Outreach Subcommittee, including events at the 2023 IEEE ISIT (flagship conference) in Taiwan, such as organizations of the mentorship events and “Meet the Shannon Lecturer” seminar.
- Organized the best Master and Bachelor thesis prize awards ceremony in collaboration with Computer society East. It was a selection based on 8 nominated theses, and the Promotor for the year was Assoc. Prof. Ahmed Rezine. This prize has been awarded for the 25th time and this year was specially celebrated on the occasion of the 75th anniversary of the Computer society. <https://www.ida.liu.se/edu/ugrad/thesis/priser/ida-pris/ida-pris-2023/>
- Xuesong Cai, NMT-dagarna (for high school students and teachers), Lund University, “Wireless communications meet terahertz”, 2024.
- Andreas Kerren, LiU/ITN, continues to serve as node coordinator (at Linnaeus University) in [InfraVis](#), the new national research infrastructure funded by the Swedish Research Council (Vetenskapsrådet) which supports scientific advancement through the application of state-of-the-art data analysis and visualization techniques.