

Robust AI for Science and Industry

ELLIIT Focus Period Fall 2026: Halmstad

The first focus period hosted by Halmstad University is approaching fast. The topic for the Halmstad focus period is **Robust AI for Science and Industry**.

The focus period takes place September 7 to October 9. Registration for the focus period symposium taking place September 22-24 is open until September 3rd.

The topics of the talks at the symposium cover integrating data- and knowledge-driven approaches for automated scientific modeling, formalizing AI for science, neurosymbolic AI, cross-domain AI, generative



digital twins, and multi-agent dynamics in sequential and generative models.

> **Meet the visiting scholars**

> **See the invited speakers**

> **See the symposium program and register for the event by September 3**

From Mm-waves to Sub-THz - Unleashing Bandwidth Opportunities with Hardware

ELLIIT Focus Period Spring 2027: Lund

The spring term focus period of 2027 is held at Lund University. One defining trend in the evolution of wireless systems has been the migration toward higher frequency bands. However, exploiting millimeter-wave and sub-THz frequencies presents major challenges.

The goal of the **Sub-THz Focus Period** is to bring together researchers across different disciplines to identify the most critical challenges and opportunities for future mm-wave and sub-THz systems.

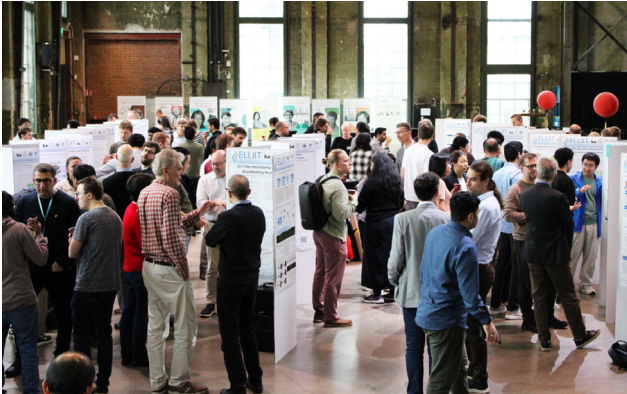
The focus period takes place April 26 - May 28, with the three day symposium on May 11 - 13, 2027.

ELLIIT Annual Workshop 2026

The annual workshop takes place in Lund October 21-22, 2026, the venue is Kårhuset on LTH Campus.

Invited keynote speaker on Wednesday October 21 is Oussama Khatib from Stanford University, talk titled "Shaping the Future of Human-Robot Collaboration". Find the abstract and the rest of the [workshop program here](#). Workshop chair is Yiannis Karayiannidis and co-chair is Xuan-Son Vu.

Last day to register your participation is September 21: [Sign up here](#).



Workshop participants at a poster session at the annual workshop 2025 in Norrköping.

ECCV in Malmö September 2026

The **European Conference on Computer Vision (ECCV)** is one of the premier international conferences in computer vision and machine learning. The conference attracts thousands of researchers from academia and industry and serves as a major forum for presenting breakthroughs in areas such as image understanding, 3D vision, video analysis, generative models, robotics, and AI.

This autumn ECCV will be held in Malmö, Sweden, September 8–12. The main

conference with plenary talks, poster sessions, and industrial exhibition takes place September 10–12 at the venues Malmö Arena and Malmömässan. Several ELLIIT faculty are involved in the organization of the conference and as area chairs, and ELLIIT has a strong presence in the program.

Keynote speakers at ECCV 2026 are Kristen Grauman, Yann LeCun, and Jamie Shotton.

[> More about the keynotes and panels](#)



Women in Algorithms, Venture into Exploration (WAVE) Workshop

The WAVE workshop takes place September 11, 2026 at the University of Copenhagen. Thanks to the support from ELLIIT, some travel support for participants from Sweden is made possible. Eligibility can be specified in the registration form. Attendance is free but **registration is required by September 7th**.

WAVE works to open doors to Theoretical Computer Science (TCS) research. The target audience includes undergraduate and graduate students and early-career researchers who are exploring their research directions or simply are curious about TCS.



Distributed Multi-Antenna Testbed Paves the Way for Future 6G Networks

Researchers at the Department of Electrical and Information Technology at LTH, Lund University have constructed a new distributed multi-antenna testbed and, for the first time, demonstrated that a distributed wireless network with beamformed radio signals and 256 antennas is feasible.

ELLIIT researchers at Lund University have developed a testbed capable of meeting the research requirements needed to advance future wireless networks and 6G technologies.

“We have demonstrated that the technology works with 256 antennas distributed across different locations, with data coherently processed in real time,” says Dumitra Iancu, PhD student in Integrated Electronic Systems.

Future wireless networks face stringent requirements: the number of users continues to grow, connected industry and auto-

mous vehicles demand reliable and secure networks. At the same time, radio frequencies used for wireless transmission are a limited resource. The testbed can now demonstrate properties that may be crucial for future 6G systems.

“Using the testbed, we can investigate how to improve the efficiency of existing spectrum usage for transmitting radio signals, enabling more users and greater network capacity,” says Ove Edfors, Professor of Radio Systems.

In terms of scale, the testbed named LuLIS after Lund University Large Intelligent Surface, is in a class of its own. It consists of 16 programmable panels with 16 antennas each, based on specialized hardware from the company AMD. LuLIS is developed in a modular fashion, allowing components to be added and distributed across an environment.

“The setup is also flexible since it is software-defined, meaning that changes in for example how data is transmitted can be implemented more easily compared to replacing hardware,” says Lina Tinnerberg, PhD student in Integrated Electronic Systems.

“An important aspect of practically building and demonstrating different technologies is that it allows us to identify challenges and practical issues that may not appear in theoretical studies. We have encountered and solved problems related to signal synchronization and distributed computation,” adds Liang Liu, Professor of Integrated Electronic Systems.

> [Read the whole story, find the paper and see photos of LuLIS](#)



From the left: Part of team LuLIS in the xG lab in Lund: Liang Liu, Dumitra Iancu, Lina Tinnerberg, Vilgot Snygg and Ove Edfors.

Optimisation for faster robotic control

A recent Nature article, featured on the journal's cover, presents the first robotic table tennis system capable of competing with elite human players under official ITTF (International Table Tennis Federation) rules. This is a milestone in robotics and AI as table tennis is a very challenging real-time control problem. ELLIIT PI Daniel Axehill and former PhD student Daniel Arnström's work has contributed to the presented Sony ACE system with an optimization algorithm, a result that is implemented in the open-source software DAQP.

What is the key result of your research that is used in the Sony ACE system?

“It is the combination of that the optimization problem has been reformulated in a certain way, the numerical linear algebra has been developed to be very efficient for the application, and the result has been packaged in an efficient software. To its core the research is mathematical, and published in a theory focused journal, but the application highlights that also these results can find their way and make a practical difference. The solution that we provide to the system is high-performance optimization capability, which is used for millisecond optimal decision-making in the joint control application.”

How does your work contribute to enabling what the article describes as “superhuman control - deciding in milliseconds”?

“Model Predictive Control is used to make the physical part of the robot to actually move according the requests by the reinforcement learning layer in the system, which provides the strategic functionality. In order to achieve fast, accurate and safe movements our DAQP solver solves 1000 optimization problems per second. Beyond fast move-

> Find the Nature paper [here](#).

> See the robotic table tennis player in action [here](#).



ments, it also incorporates constraints protecting for example the electrical motors. DAQP is also used for solving near-time-optimal control problems to quickly retract the paddle from an executed stroke back to its ready position.”

In what kinds of applications or industries could this type of technology have the greatest impact?

“It is highly interesting for various forms of control applications, such as high-performance robotics as illustrated here. It could also be used for, for example, control problems in the electrical grid but its performance comes to best use in fast and resource-constrained applications. DAQP is not a controller, it is a quadratic programming optimization software, so it can be used for other tasks than control. “



ELLIIT PI Daniel Axehill (to the left) and Daniel Arnström. Photo: LiU.

D. Arnström, A. Bemporad and D. Axehill: **A Dual Active-Set Solver for Embedded Quadratic Programming Using Recursive LDL T Updates** in IEEE Transactions on Automatic Control, vol. 67, no. 8, pp. 4362-4369, Aug. 2022.

Results from ELLIIT project C5

A recent publication summarizes the results from project C5, GPAI - General Purpose AI Computing with PIs Håkan Grahn (BTH), Flavius Gruian (LU) and Christoph Kessler (LiU):

H. Grahn, C. Kessler, F. Gruian, J. Janneck, A. Borg, A. Ernstsson, M. Boulasikis, S. Qummar, and C. Åleskog:

General Purpose AI Computing: Opportunities and Challenges,

in IEEE Computer, 59(8):39-49, Aug 2026.

Why you are polite to your chatbot

Recruited faculty Tom Ziemke (LU) was interviewed for the Swedish magazine Filter's article on why people are so **polite to chatbots** (in Swedish).

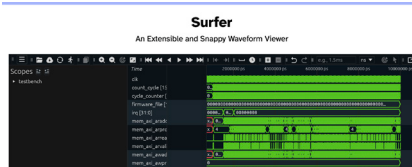
Chips Joint Undertaking Grant

Oscar Gustafsson (LiU) has received Chips Joint Undertaking funding. Chips JU is a European public-private partnership that promotes the development and adoption of advanced nano-electronic chip technologies and systems manufactured in Europe.

Gustafssons project is to continue development of Surfer as part of the Open Design Environment for European Chips **ODE4EC** initiative.

Read more about Surfer on the outreach page on Open source Software from the ELLIIT environment:

> Open-Source Software and Tools



Standing the test of time

Director Erik G. Larsson and co-authors Hien Quoc Ngo, Alexei Ashikhmin, Hong Yang, and Thomas L. Marzetta have been awarded the 2026 IEEE Communications Society Test of Time Paper Award for Advances in Communications for the paper **Cell-Free Massive MIMO Versus Small Cells**. The paper was originally published in the March issue of IEEE Transactions on Wireless Communications in 2017.

The Test of Time Award goes to papers "that open new lines of work, envision bold approaches to communication, formulate new problems to solve, and essentially enlarge the field of communications engineering."



From Data to Decisions

Modern software is no longer released once or twice a year. In many organizations, new versions are deployed continuously, sometimes several times a day. This rapid pace puts new demands on how software quality is ensured, and on how future engineers are trained. At BTH and LU, the ELLIIT project "Quality Assurance in Continuous Software Engineering" has turned this challenge into an opportunity for both research and education. Read the whole story:

> From Data to Decisions – Educating Software Engineers in Continuous Development

Digital Arena Sweden launched

A new national test center with 5G capabilities, a staged pathway to 6G and expert support has been launched in June. It aims to strengthen Swedish industry by providing early access to advanced digital solutions in 5G, 6G, and AI. ELLIIT infrastructure in 5G and future 6G are a prominent part of the test center.



Supported by Sweden's innovation agency Vinnova through the Advanced Digitalization innovation program, the collaboration brings together Lund University, Ericsson, Telia, RISE Research Institutes of Sweden, Future by Lund and others actors.

> Digital Arena Sweden

- In June Tom Ziemke gave a keynote on "Understanding others' understanding: The observer grounding problem in human-AI interactions" at the Brazilian **CIFM conference**
- Christoph Reichenbach (LU) and Emma Söderberg (LU) received **Distinguished Reviewer Awards** at FSE 2026 (Foundations of Software Engineering) in June.
- Michael Felsberg (LiU) has been and is appointed area chair for **CVPR 2026**, **ICML 2026**, **ECCV 2026**, and **ICLR 2027**, all top tier conferences in machine learning and computer vision.

- Oscar Gustafsson was invited to demonstrate APyTypes at the **IEEE Symposium on Computer Arithmetic 2026**.

More on APyTypes on the ELLIIT **outreach page** under open-source software and tools.

The accompanying paper "Approximating Floating-Point Addition Using The Geometric Mean" by Theodor Lindberg and Oscar Gustafsson was one of four papers nominated for best paper award at the conference.