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STADIUS
Center for Dynamical Systems, Signal Processing and Data Analytics



DECEMBER

AWARDS ▪ NEWS ▪ EVENTS ▪ PROJECTS ▪ STAFF UPDATE ▪ PUBLICATIONS

Welcome

Wishing you a joyous holiday season and a happy and peaceful New Year 2023!

Awards



IEEE SPS Donald G. Fink Overview Paper Award for Lieven De Lathauwer

We are very proud to announce that Nicholas D. Sidiropoulos, **Lieven De Lathauwer,** Xiao Fu, Kejun Huang, Evangelos E. Papalexakis, and Christos Faloutsos have been selected for the 2022 IEEE SPS Donald G. Fink Overview Paper Award for their paper:
"Tensor Decomposition for Signal Processing and Machine Learning", published in IEEE Transactions on Signal Processing, July 2017.
The Award will be handed over during the Awards Ceremony at ICASSP 2023 in Greece.
Congratulations Lieven!

Read the paper

Tensorlab+
A reproducible research repository for tensor computations

Second release of Tensorlab+.

Tensorlab+ is a reproducible research repository for tensor computations, built on top of Tensorlab. The second

release provides support for 10 additional papers. The new code can be downloaded per paper or, alternatively, can be obtained by downloading the full repository.
In total, Tensorlab+ now allows people to recreate the results of 220+ experiments that are discussed in 44 papers, thus allowing the reproduction of 250+ figures and tables, and it includes 42 tutorials and demos.
The code is free to use for non-commercial research.
Contributions for the second release were made by Stijn, Raphaël, Nico, Michiel, Nithin, Eric, Mikael, Otto and Lieven



Bart De Moor on Belgian Economical Mission to Japan

Professor Bart De Moor participated in the Belgian Economical Mission to Japan, led by princess Astrid of Belgium. He participated in two seminars:
1. At **Waseda University**, he took part in a panel discussion about Innovation nd Technology Transfer.
2. At **Kyoto University**, he attended the 100-th anniversary of the book donation by Japan to the Leuven University: the Interwar Period Belgian- Japanese Relations, Cultural Diplomacy and Japanese Book Collections in their Global Context".

Awards



We are very happy to announce that
Arnout Roebben won the public prize of Mtech+ for his master thesis work on neuro-steered hearing aids: "Op weg naar gebruikersspecifieke hoorapparaten op basis van hersengolven: detecteren of de gebruiker actief luistert". This work was supervised by Alexander Bertrand and Tom Francart.

The Mtech+prijs is a side competition of the Vlaamse Scriptieprijs and promotes bachelor's and master's theses to the general public. The Vlaamse Scriptieprijs itself is open to all contestants, while the Mtech+prijs is solely concerned with works related to technology and innovation. Contestants first need to write an article about their work, tailored to the general public. A shortlist of three works is selected from these submissions, from which the jury members choose a winner of the jury award. The three finalists also record a pitch, for which the audience can choose a winner of the audience award by voting for their favourite pitch.

Arnout received 704 out of 1524 votes!

Congratulations!

Events @ STADIUS

For more information about STADIUS events please visit the STADIUS Event webpages.

E-DUALITY seminars and progress meeting (Part III)

When: 23/12/2022, 15:00 - 17:00

Where: ESAT, B00.35

New Year Meeting of the Flanders AI Research Program at KU Leuven

When: 23/12/2022, 16.00-18.00

Where: ESAT

Balancing safety and performance in learning-based optimal control, with **Panos Patrinos** of KU Leuven ESAT STADIUS

When: 30/01/23, 15.00-16.00

Where: online

Interpretation and explanation of deep computer vision, with **José Oramas** of IDLab UAntwerpen

When: 17/01/2023, 02.00-04.30

Where: online

online workshop in the VAIA-TRAIL Joint Seminar Series for researchers

New colleagues

A warm welcome to all new researchers and personnel at STADIUS!

Hi, here,
My name is **Qiang FU**. I recently started as a PostDoc with Prof. Yves Moreau on the MICADO project collaborating with Prof. Joris Vermeesch (Laboratory for Cytogenetics and Genome Research, UZ Leuven) focusing on liquid biopsy analysis based on cell-free DNA profiling. I obtained my PhD in Bioscience Engineering with Prof. Kathleen Marchal focusing on Expression Compendium creation methodology and its application in regulatory network discovery. I then worked at Sciensano developing microbial characterization



pipelines based on whole genome sequencing data, and later as a single-cell analyst at VIB focusing on the multiomics analysis combining scRNAseq, scVDJseq, and cell surface protein data. In my spare time, I enjoy the accompany of my family and playing badminton. Looking forward to meet you all.
Best
Qiang

We wish the best of luck to the researchers who will be leaving STADIUS soon

Best of luck!

- **Robbe Van Rompaey**, PhD researcher supervised by Marc Moonen, will start his career in Nokia Bell Labs after defending his PhD in December.

Projects approved @ STADIUS

On December 7th FWO Published the results of the 2022 Call for Research Projects. We are happy to announce that the following projects were accepted:

- FWO Project (Senior): "Artificial Intelligence (AI) for data-driven personalised medicine ”
  - Promotors: **Maarten De Vos** (STADIUS) & Wim Janssens (UZ Leuven)
- FWO Project (Senior): "User-centric distributed signal processing algorithms for next generation cell-free massive MIMO based wireless communication networks"
  - Promotors: **Marc Moonen** (STADIUS) & Sofie Pollin (WaveCore)

An iBOF project with a strong representation of STADIUS got approved:

- Tensor Tools for Taming the Curse
  - Coordinator: Frank Verstraete (UGent)
  - Promotors at KU Leuven: **Lieven De Lathauwer, Bart De Moor, Johan Suykens,** Fatemeh Mohammadi

A European Project with STADIUS team onboard got approved:

- HORIZON-RIA: "AI-PROGNOSIS, Trustworthy artificial intelligence (AI) tools to predict the risk of chronic non-communicable diseases and/or their progression"
  - Coordinator: The Aristotle University of Thessaloniki
  - Promotor at STADIUS: **Maarten De Vos**

Also, a new VLAIO Development Project with Nokia Labs got approved:

- SPARTA: "Signal Processing for next-generation opticAl netwoRks and remoTe Audio experiences"
  - Promotor at STADIUS: **Marc Moonen**

- Promotor in Nokia Labs: Jos van Sas

Publication Digest

Here's the monthly STADIUS Publications Digest, including new reports that have been added to the publications database.
Please remember to have your own reports added in the publications database and make sure your entries are kept up to date (status submitted/accepted/published) at all times.

Contact Ida for new additions and updates, do not add/update database content yourself.

22-127
Wang R., Schuurmans M., Patrinos P., "Interaction-aware Model Predictive Control for Autonomous Driving", Technical Report 22-127, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022.

22-128
Van Rompaey R., *Distributed Signal Processing Algorithms for Sensor and Actuator Networks*, PhD thesis, Faculty of Engineering, KU Leuven (Leuven, Belgium), Dec. 2022, 244 p.
Lirias number: 3947267.

22-129
Hemelhof L., Markovsky I., Patrinos P., "Data-Driven Output Matching of Output-Generalized Bilinear and Linear Parameter-Varying systems", Technical Report 22-129, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022.

22-131
Bodard A., Moran R., Schuurmans M., Patrinos P., Sopasakis P., "SPOCK: A proximal method for multistage risk-averse optimal control problems", Technical Report 22-131, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022.

22-132
Ruiz S., van Waterschoot T., Moonen M., "Cascade algorithms for combined acoustic feedback cancellation and noise reduction", Technical Report 22-132, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022.

22-135
Tang D., Taseska M., van Waterschoot T., "Toward learning robust contrastive embeddings for binaural sound source localization", *Frontiers in Neuroinformatics*, 2022.
Lirias number: 3973985.

22-136
Derebssa B., Adugna E., Eneman K., van Waterschoot T., "Detection and restoration of click degraded audio based on high-order sparse linear prediction", *Zede Journal*, vol. 40, 2022, pp. 99-116.
Lirias number: 3973987.

22-137
Cadavid J., Moller M.B., Bech S., van Waterschoot T., Ostergaard J., "Performance of low frequency sound zones based on truncated room impulse responses", in *Proc. of the 17th Int. Audio Mostly Conf (AM'22)*, St. Polten, Austria, 2022, pp. 239-245.
Lirias number: 3973989.

22-138
Elvander F., Karlsson J., van Waterschoot T., "Worst-case uncertainty bounds in covariance interpolation", in *Proc. of the 30th European Signal Process. Conf. (EUSIPCO 2022)*, Belgrade, Serbia, 2022, pp. 2256-2260.
Lirias number: 3973991.

22-139
Riezu S.A.V., Elvander F., van Waterschoot T., Fernandez-Grande E., "Optimal sensor placement for sound field reconstruction", in *Proc. of the 24th Int. Congress*

Acoustics (ICA 2022), Gyeongju, South Korea, 2022.
Lirias number: 3973999.

22-140

Lohmann A., van Waterschoot T., Bitzer J., Doclo S., "Dereverberation in acoustic senson networks using weighted prediction error with microphone-dependent prediction delays", Technical Report 22-140, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022.
Lirias number: 3973999.

22-141

Puri C., Kooijman G., Vanrumste B., Luca S., "Forecasting time series in healthcare with Gaussian processes and Dynamic Time Warping based subset selection", *IEEE Journal of Biomedical and Health Informatics*, vol. 26, no. 12, Oct. 2022, pp. 6126-6137.
Lirias number: 3972796.

22-142

Asmare M.H., Chuma A.T., Varon C., Bayou F.W., Janssens L., Vanrumste B., "Characterization of rheumatic heart diseases from electrocardiogram recordings", Technical Report 22-142, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022. Accepted for publication in*Physiological measurement*.
Lirias number: 3972603.

22-143

Forzano F., Antonova O., Clarke A., de Wert G., Hentze S., Jamshidi Y., Moreau Y., Perola M., Prokopennko I., Read A., Reymond A., Stefansdottir V., van El C., Genuardi M. ; Executive Committee of the European Society of Human Geenetics, "Reply to Letter by Tellier et al. Scientific refutation of ESHG statement on embryo selection", *Eur. J. Hum. Genet*, Dec. 2022.
Lirias number: 3975330.

22-144

Yin J., Damiano S., Verhelst M., van Waterschoot T., Guntoro A., "Real-Time Acoustic Perception for Automotive Applications", Technical Report 22-144, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022. Accepted for publication in *Proceedings of the 2023 Conference and Exhibition on Design, Test and Automation in Europe*.
Lirias number: 3977738.

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