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STADIUS
Center for Dynamical Systems, Signal Processing and Data Analytics

STADIUS Newsletter

January

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

Welcome

Welcome to the first STADIUS Newsletter of 2022



News

timeseer.AI

10th startup for Bart De Moor: Timeseer.ai

Bert Baeck, founder of STADIUS spin-off Trendminer (sold

to Software AG), has started a new company, called Timeseer with the goal to improve (time series) data collection worldwide. This is no less than the 10th spin-off/start-up initiative of Bart De Moor.

- Disover their website: www.timeseer.ai
- Article "Ondernemer Bert Baeck: 'Ik voel de druk om te bewijzen dat Trendminer geen onehitwonder was'", De Tijd , 6 January 2022 (behind paywall)



Blog series by spin-off Aspect Analytics

Spin-off Aspect Analytics added two new blog posts to its blog series:

- "Drugs and small molecule metabolites" looking into challenges and tools to help you with drug metabolite study.
- "Lipids", on the technical considerations, applications and limitations of lipid imaging with mass spectrometry

Aspect Analytics blog series

And more:

- Don't forget to register for our **seasonal external STADIUS Newsletter** (and to recommend it to all your friends!)
- Flanders AI Academy, VAIA, has jampacked this spring with courses and trainings on AI. Don't forget to check it out or subscribe to their newsletter or socials (twitter - LinkedIn)
- Flanders AI Research, the research branch of the ambitious Flemish AI Plan started the new year with a monthly newsletter. If you didn't receive it already, don't forget to register for the next (e-mail to info@flandersairesearch.be).
- Prof. Bart De Moor participated in the peer review of Eurostat, statistical office of the European Union. (press release / Assessment Report)

Events @ STADIUS

Distribution-free prediction intervals for time series forecasting

Speaker: Prof. **Willem Waegeman** (UGent)

When**: 10 february 2022**, 14:30 - 15:30

Where**: online & Heverlee** (if the COVID situation allows)

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

An AI for Time Series seminar, collaboration between
STADIUS, VAIA & Flanders AI Research

Seizure Detection with Wearable Devices and AI

Speaker: Prof. **Christos Chatzichristos** (KU Leuven ESAT-STADIUS)
When**: 24 February 2022**, 14:30 - 15:30
Where**: online & Heverlee** (if the COVID situation allows)
An AI for Time Series seminar, collaboration between
STADIUS, VAIA & Flanders AI Research

Interpretability and explainability in machine learning

Speaker: Prof. **Isel Grau Garcia** (TU Eindhoven)
When: **24 february 2022**, 14:00-15:00
A VAIA Sense & Sensibility of AI Webinar

Multi-view Analysis of Temporal Data

Speaker: Prof. **Elena Tsiporkova** (Sirris)
When**: 10 March 2022**, 14:30 - 15:30
Where**: online & Heverlee** (if the COVID situation allows)
An AI for Time Series seminar, collaboration between
STADIUS, VAIA & Flanders AI Research

Fairness & Bias in Natural Language Processing

What: short training in ESAT
When: **15 & 16 March 2022**
A VAIA training in collaboration with STADIUS

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New Projects @ STADIUS

The following projects have started on 1/01/2022:

- **FWO Project** "Taming Nonconvexity in Structured Low-Rank Optimization "
  - Supervisor: Panos Patrinos (STADIUS), Masoud Ahookhosh (University of Antwerp)
- **FWO Project:** "Towards natural brain-computer interfaces: representation learning for identifying the temporal encoding of realistic video footage in EEG
  - Supervisors: Alexander Bertrand (STADIUS), Tinne Tuytelaars
- **FWO PhD Scholarship** for **Brecht Evens**: "Learning to interact safely with humans: A game-theoretic control framework for next-generation autonomous

systems”
- Supervisor: Panos Patrinos

New colleagues

A warm welcome to all researchers that started at STADIUS in January 2022!



Hi Stadius,

My name is Susan Ghaderi, and I recently joined the group of prof. Yves Moreau as a postdoc. I am working on developing Bayesian inference methodologies to sample from distributions with nonsmooth nonconvex potential functions. I got my Ph.D. at the University of Luxembourg while I was working on mathematical approaches to biological networks. I have a bachelor's and master's degree in applied mathematics from the Razi and Tabirz Universities of Iran. Furthermore, from 2018-to 2020, I was a Ph.D. scholar at KU Leuven, and I focused on developing my skills in Bayesian learning, machine learning, and neural networks. My research interests are optimization, bioinformatics, statistical learning (especially Bayesian learning), systems biology, and machine learning. In my free time (if I have any), my passion is for reading books and fashion designing.

Best wishes for all,
Susan



Hello everyone!

I am Yamini, and I have joined the group of prof. Bart de Moor, working with the ENZYMARES project. Originally from India, I have been in Belgium for the last 3 years, where I came to pursue an MSc. in Statistics and Data Analytics at KU Leuven. I have also done a bachelor's in Mechanical engineering, and have worked as a data analyst in various industries. My research interests are Bayesian statistic, Machine learning and epidemiology. In my free time, you can find me dancing Zouk, climbing or singing.

Looking forward to meeting all of you!
Yamini

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.

21-175

Geirnaert S., Francart T., Bertrand A., "Time-adaptive Unsupervised Auditory Attention Decoding Using EEG-based Stimulus Reconstruction", Technical Report 21-175, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2021.

21-176

Simm J., Humbeck L., Zalewski A., Sturm N., Heyndrickx W., Moreau Y., Beck B., Schuffenhauer A., "Splitting chemical structure data sets for federated privacy-preserving machine learning", *Journal of Cheminformatics*, vol. 13, no. 96, 2021, pp. 1-14.
Lirias number: 3651262.

21-177

De Brouwer E., Becker T., Moreau Y., Havrova E.K., Trojano M., Eichau S., Ozakbas S., Onofrj M., Grammond P., Kuhle J., Kappos L., Sola P., Cartechini E., Lechner-Scott J., Alroughani R., Gerlach O., Kalincik T., Granella F., Grand Maison F., Bergamaschi R., Sa M.J., Van Wijmeersch B., Soysal A., Sanchez-Menoyo J.L., Solaro C., Boz C., Iuliano G., Buzzard K., Aguera-Morales E., Terzi M., Castillo Trivio T., Spitaleri D., Van Pesch V., Shaygannejad V., Moore F., Oreja-Guevara C., Maimone D., Gouider R., Csepany T., Ramo-Tello C., Peeters L., "Corrigendum to Longitudinal machine learning modeling of MS patient trajectories improves predictions of disability progression [Computer Methods and Programs in Biomedicine, Volume 208, september 2021, 106180]", *Computer Methods and Programs in Biomedicine*, vol. 213, 2022, pp. 106-479.
Lirias number: 3630070.

21-178

Simpson-Yap S., De Brouwer E., Kalincik T., Rijke N., Hillert J.A., Walton C., Edan G., Moreau Y., Spelman T., Geys L., Parciak T., Gautrais C., Lazovski N., Pirmani A., Ardeshirdavani A., Forsberg L., Glaser A. McBurney R., Schmidt H., Bergmann A.B., Braune S., Stahmann A., Middleton R., Salter A., Fox R.J., van der Walt A., Butzkueven H., Alroughani R., Ozakbas S., Rojas J.I., van der Mei I., Nag N., Ivanov R., Sciascia do Olival G., Dias A.E., Magyari M., Brum D., Mendes M.F., Alonso R.N., Nicholas R.S., Bauer J., Chertcoff A.S., Zabalza A., Arrambide G., Fidao A., Comi G., Peeters L., "Associations of Disease-Modifying Therapies with COVID-19 severity in multiple sclerosis", *Neurology*, vol. 97, no. 8, 2021, pp. e1870-e1885.
Lirias number: 3593419.

21-179

Simpson-Yap S., Pirmani A., De Brouwer E., Geys L., Parciak T., Helme A., Rijke N., Kalincik T., Hillert J., Moreau Y., Edan G., Spelman T., McBurney R., Schmidt H., Bergmann A., Braune S., Stahmann A., Salter A., Bebo B., van der Walt A., Butzkueven H., Rojas J.I., van der Mei I., Sciascia do Olival G., Magyari M., Alonso R., Nicholas R., Chertcoff A., Zabalza A., Arrambide G., Sharmin S., Descamps A., Costers L., Dobson R., Miller A., Rodrigues P., Comi G., Peeters L., "Updated results of the COVID-19 in MS global data sharing initiative validate consistent associations of anti-CD20 and other reported risk factors with severe COVID-19 outcomes", *Multiple Sclerosis Journal*, vol. 27, Oct. 2021, pp. 741-743.
Lirias number: 3638207.

21-180

Mundanad Narayanan A., *Miniaturization effects and node placement for neural decoding in EEG sensor networks*, PhD thesis, Faculty of Engineering, KU Leuven (Leuven, Belgium), Sep. 2021, 168 p.
Lirias number: 3543877.

21-181

Vandecappelle M., *Numerical algorithms for tensor decompositions*, PhD thesis, Faculty of Engineering, KU Leuven (Leuven, Belgium), Sep. 2021, 320 p.
Lirias number: 3541616.

21-182

Huysmans D., *Advances in unobtrusive monitoring of sleep apnea using machine learning*, PhD thesis, Faculty of Engineering, KU Leuven (Leuven, Belgium), Oct. 2021, 216 p.
Lirias number: 3551542.

21-183

Morales Tellez J., *Respiratory sinus arrhythmia estimation : closing the gap between research and applications*, PhD thesis, Faculty of Engineering, KU Leuven (Leuven, Belgium), Nov. 2021, 230 p.
Lirias number: 3611608.

22-01

Tao Q., Li Z., Xu J., Lin S., De Schutter B., Suykens J.A.K., "Short-Term Traffic Flow Prediction Based on the Efficient Hinging Hyperplanes Neural Network", Technical Report 22-01, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022. Accepted for publication in *IEEE Transactions on Intelligent Transportation Systems*.
Lirias number: 3664049.

22-02

Chatzichristos C., Van Eyndhoven S., Kofidis E., Van Huffel S., "Coupled tensor decompositions for data fusion", in 10 *Tensors for Data Processing. Theory, Methods, and Applications*, (Liu Y., ed.), Elsevier, Academic Press, 2022, pp. 341-370.
Lirias number: 3664057.

22-03

Botman L., Soenen J., Theodorakos K., Yurtman A., Bekker J., Vanthournout K., Blockeel H., De Moor B., Lago J., "A scalable ensemble approach to forecast the electricity consumption of households", Technical Report 22-03, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022.

22-04

Filtjens B., Ginis P., Nieuwboer A., Vanrumste B., Slaets P., "Modelling and identification of characteristic kinematic features preceding freezing of gait with convolutional neural networks and layer-wise relevance propagation", *BMC Medical Informatics and Decision Making*, vol. 21, no. 1, Dec. 2021, pp. 341.
Lirias number: 3647935.

22-05

Puri C., Kooijman G., Masculo F., Sambeek S.V., Boer S.D., Hua J., Huang N., Ma H., Jin Y., Ling F., Li G., Zhang D., Wang X., Luca S., Vanrumste B., "A personalized Bayesian Approach for Early Intervention in Gestational Weight Gain Management Toward Pregnancy Care", *IEEE Access*, vol. 9, Jan. 2021, pp. 2169-3536.
Lirias number: 3651326.

22-06

Oldenhof M., Arany A., Moreau Y., Simm J., "Self-labeling of Fully Mediating Representations by Graph Alignment", in *Artificial Intelligence and Machine Learning (BNAIC/Benelearn 2021)*, Esch-sur-Alzette, Luxembourg, Nov. 2021, pp. 46-65.
Lirias number: 3667057.

22-07

Forzano F., Antonova O., Clarke A., de Wert G., Hentze S., Jamshidi Y., Moreau Y., Perola M., Prokopenko I., Reymond A., Stefansdottir V., van El C., Genuardi M., "The use of polygenic risk scores in pre-implantation genetic testing : an unproven, unethical practice", *European Journal of Human Genetics*, Dec. 2021, 3 p.
Lirias number: 2851481.

22-08

Zamani Esteki M., Ardeshirdavani A., Alcaide D., Masset H., Ding J., Sifrim A., Kumar P., Dimitriadou E., Aerts J., Voet T., Moreau Y., Vermeersch J., "HiVA : an integrative wet- and dry-lab platform for haplotype and copy number analysis of single-cell genomes",*bioRxiv*, Mar. 2019, 15 p.
Lirias number: 2851481.

22-09

Amer A.Y.A., Wouters F., Vranken J., Dreesen P., de Korte-de Boer D., van Rosmalen F., van Brussel B., Iwan C.C., Mesotten D., Vandervoort P., Aerts J.M., Vanrumste B., "Vital signs prediction for COVID-19 patients in ICU", *Sensors*, vol. 21, no. 23, Dec. 2021, art nb. 8131 p.
Lirias number: 3649592.

22-10

Asmare M.H., Woldehanna F., Hunegnaw S., Janssens L., Vanrumste B., "Retraction : Prevalence of rheumatic heart diseade in a major referral cardiology clinic in Ethiopia : A retrospective cross-sectional study", *Plos one*, vol. 16, no. 9, Sep. 2021, art nb. e258068 p.
Lirias number: 3591306.

22-11

Leonardi M., Uzuner C., Mestdagh W., Lu C., Guerriero S., Zajicek M., Dueckelmann A., Filippi F., Buonomo F., Pascual M. A., Stepniewska A., Ceccaroni M., Van den Bosch T., Timmerman D., Hudelist G., Condous G., "International and multicenter prospective diagnostic accuracy of transvaginal ultrasound for endometriosis using the International Deep Endometriosis Analysis (IDEA) terminology: pilot study", Technical Report 22-11, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022.

22-12

Schelles M., Wouters J., Asamoah B., Mc Laughlin M., and Bertrand A., "Objective evaluation of stimulation artefact removal techniques in the context of neural spike sorting", Technical Report 22-12, ESAT-STADIUS, KU Leuven (Leuven, Belgium), 2022. Journal of Neural Engineering.
Lirias number: 3677983.

22-13

Baijot M., Mundanad Narayanan A., Brites Atalaia Rosa M., Dan J., Bertrand A., Kraft M., "A miniature EEG node for synchronized wireless EEG sensor networks", in *8th International Electronic Conference on Sensors and Applications*, Virtual, Online, Nov. 2021.
Lirias number: 3678081.

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