

WSOM 19

13th International Workshop on Self-Organizing Maps and
Learning Vector Quantization, Clustering and Data Visualization

Barcelona - Spain
26-28 June 2019

Final Program & Practical information



WELCOME!

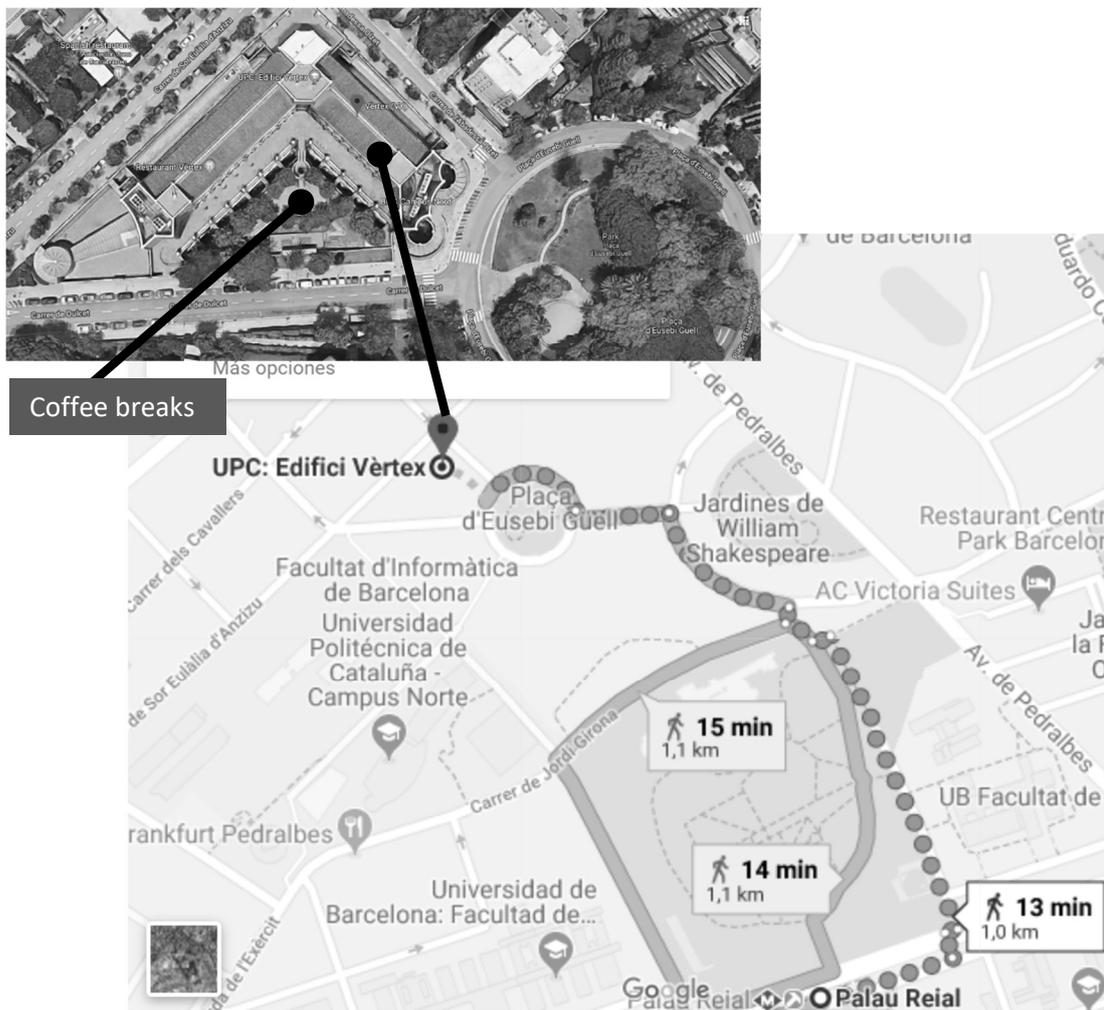
Welcome to Barcelona and welcome to the 13th WSOM+ conference, hosted by the Intelligent Data Science and Artificial Intelligence (IDEAI-UPC) Research Center at Universitat Politècnica de Catalunya (UPC BarcelonaTech)

This is an inclusive city, home to thriving Machine Learning and Computational Intelligence communities. WSOM+ 2019 aims to build on a successful string of editions that started more than two decades ago with WSOM'97 in Helsinki.

This brochure should help you to navigate through the conference. It includes information about the venue and other practicalities, the social events, the daily program, the organization and the list of participants and sponsors.

VENUE

The conference will take place at the **Sala d'Actes** of the **Vèrtex building** of **Campus Nord** at **UPC BarcelonaTech**. This campus is in the south part of the city, communicated with the city center through public transport: underground, tram and buses. See images below for location, including directions from the nearest metro station: **Palau Reial** (L3)



SOME PRACTICALITIES

WIFI ACCESS

Network: **WSOM+2019**

Password: **WSOM&plus19**

WEBSITE

<https://wsom2019.cs.upc.edu>

A detailed interactive program is available at

<https://easychair.org/smart-program/WSOM2019>

PRESENTATIONS

All presentations will be oral, including those accepted as posters. General oral presentations will be allocated **20'**, whereas "posters" will be allocated **5'**.

PROCEEDINGS

A copy of the proceedings (either printed or in a customised USB) is included with the registrations. Extra copies in both formats will be available on site upon request. Online access to the book is free for authors until the end of July'19 (link in WSOM+ website)

SPONSORS

WSOM+19 has been organized with the kind support of the following companies:



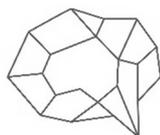
An innovation facility created in 2016 by Spanish Telefonica as a "Moonshots factory".

www.alpha.company



A company of "Big Data for health management". Also a UPC LARCA Research Group spin-off.

www.amalfianalytics.com



LumenAi

A French company providing expertise in Data Science and real time Machine Learning.

www.lumenai.fr



PREDICTASSISTANCE

A Catalan company delivering AI solutions in health care for chronic and fragile patients.

<http://predictassistance.com>

COMMITTEES

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Pablo Estevez (Chile)
Timo Honkela (Finland)
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Erzsebet Merenyi (USA)
Madalina Olteanu (France)
Michel Verleysen (Belgium)
Thomas Villmann (Germany)
Takeshi Yamakawa (Japan)
Hujun Yin (UK)

LOCAL ORGANIZING COMMITTEE

Alfredo Vellido, Chair (IDEAI, UPC BarcelonaTech)
Karina Gibert (IDEAI, UPC BarcelonaTech)
Cecilio Angulo (IDEAI, UPC BarcelonaTech)
José David Martín (Universitat de València)

PROGRAM COMMITTEE

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Thomas Villmann (Germany)
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Hujun Yin (UK)

SOCIAL EVENTS

GENERALITIES

Coffee breaks: At the gardens of the Vèrtex building, where the conference takes place.

Lunches: At **Unity** restaurant, inside UPC Campus Nord. See map below.

Event accreditation: The badge you will be provided with at the registration desk will be your identification for all events, including the events listed next. You will be provided with tickets for lunches.

WELCOME EVENT

Drinks and nibbles by the beach to get in the mood, after the first day of the conference. Bring your swimming gear! This event is sponsored by **Alpha**.

Where: Barcelona Biomedical Research Park (PRBB): www.prbb.org. Nearest metro station: Ciutadela Vila Olímpica (L4, yellow line) Tram: T4.

When: Wednesday 26th at 18:30.

CITY CENTER TOUR

Guided tour through the highlights of Barcelona **Gothic Quarter**.

Where: Meeting point: Plaça Nova (Cathedral Square). Nearest metro stations: Plaça Catalunya (L1, L3) and Jaume I (L4).

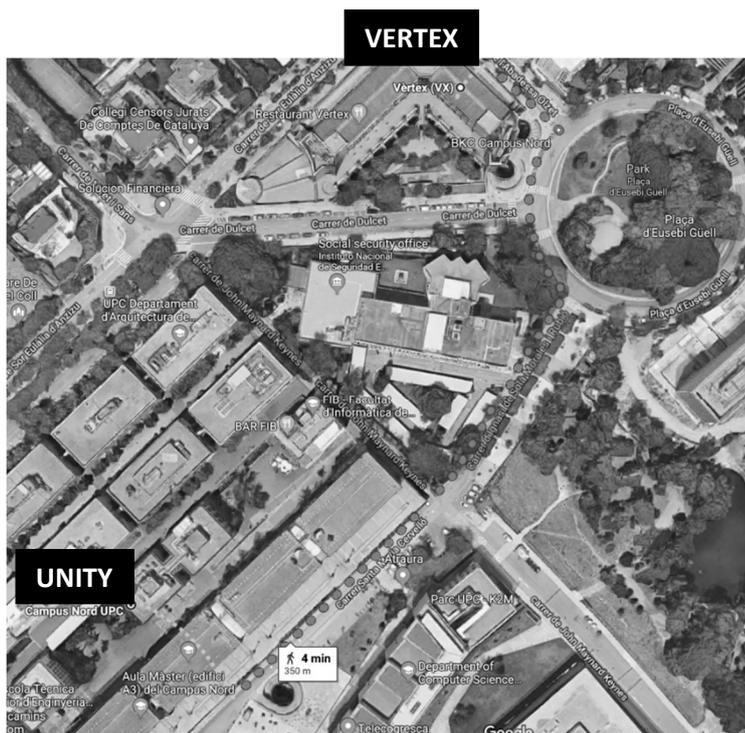
When: Thursday 27th at 18:30.

GALA DINNER

Directly after the tour, the Gala Dinner will take place at **Palau Requesens**, a Gothic palace built on top of the ancient Roman walls of Barcino, at the heart of the old city.

Where: Carrer Bisbe Cassador, 3. Nearest metro stations: Liceu (L3) and Jaume I (L4).

When: Thursday 27th at 20:00.



PROGRAM

Wednesday, June 26, 2019

| | |
|-------------|--|
| 08:30–09:00 | Registration |
| 09:00–10:15 | Welcome speech and invited talk (Alessandro Sperduti, Italy) |
| 10:15–11:05 | Session 1. LVQ: Practical Applications Sousa, D. et al. LVQ-Type Classifiers for Condition Monitoring of Induction Motors: A Performance Comparison Villmann, T. et al. Searching for the Origins of Life - Detecting RNA Life Signatures Using Learning Vector Quantization |
| 11:05–11:30 | Coffee break |
| 11:30–13:10 | Session 2. SOM: Theory and Methods Fix, J., Frezza-Buet, H. Look and Feel What and How Recurrent Self-Organizing Maps Learn Ma, X. et al. Self-Organizing Mappings on the Flag Manifold Girau, B., Upegui, A. Cellular Self-Organising Maps - CSOM Taylor, J., Merényi, E. A Probabilistic Method for Pruning CADJ Graphs with Applications to SOM Clustering |
| 13:15–14:40 | Lunch |
| 14:45–16:00 | Session 3. SOM: Practical Applications, part I Bernard, Y. et al. Novelty Detection with Self-Organizing Maps for Autonomous Extraction of Salient Tracking Features Hameed, A.A. et al. Robust Adaptive SOMs Challenges in a Varied Datasets Analytics Cottrell, M. et al. Detection of Abnormal Flights Using Fickel Instances in SOM Maps |
| 16:00–17:00 | Invited Talk (Paulo Lisboa, U.K.) |
| 18:30- | Welcome event @ PRBB by the beach |

SOME NOTES ABOUT TRANSPORT

From/to the AIRPORT: Taxis to and from the airport are expensive. A couple of alternatives: AEROBUS (www.aerobusbcn.com) from/to the city center (Plaça Catalunya and Plaça Espanya) is quick, frequent and inexpensive (10,20€ return); by metro (L9 from *Zona Universitaria*, 1 station away from *Palau Reial*, which is the closest to the conference venue. Traject ~40', single ticket 4,60€)

Metro/Bus/Tram: The whole city is very well connected (www.tmb.cat/en) and it has an integrated tariff system (same ticket for every transport and you can combine two different transports within the same journey without paying extra). Single tariff area for the whole city. For more than 4 journeys, single tickets are not worth it; instead, go for a T-10 card (10 journeys): it can be used by more than one person.

Accessing the Vèrtex Building venue: By **metro**: Green line (L3), *Palau Reial* station. By **bus**: plenty of buses stop nearby (mostly in Diagonal Av.) check your journey with www.tmb.cat/en or [maps.google](http://maps.google.com). By **tram**: through Diagonal Av. Check <http://www.tram.cat/en>.

Accessing the welcome event PRBB venue: By **metro**: Ciutadela Vila Olímpica station (L4, yellow line). By **bus**: check your journey with www.tmb.cat/en or [maps.google](http://maps.google.com).

PROGRAM

Thursday, June 27, 2019

| | |
|-------------|--|
| 09:00–10:00 | Invited talk (Aïda Valls, Spain) |
| 10:00–10:50 | Session 4. Life Science Applications, part I Riley, P. et al. A Voting Ensemble Method to Assist the Diagnosis of Prostate Cancer Using Multiparametric MRI Srivastava, M. et al. Classifying and Grouping Mammography Images into Communities Using Fisher Information Networks to Assist the Diagnosis of Breast Cancer |
| 10:50–11:15 | Coffee break |
| 11:15–13:00 | Session 5. Applications Faigl, J., Prágr, M. Incremental Traversability Assessment Learning using Growing Neural Gas Algorithm Elend, L., Kramer, O. Self-Organizing Maps with Convolutional Layers Rosengarten, M., Ramachandran, S. SOM-Based Anomaly Detection & Localization for Space Subsystems Gibert, K., Karna, A. Using Hierarchical Clustering to Understand Behavior of 3D Printer Sensors Kvinge, H. et al. A Walk Through Spectral Bands: Using Virtual Reality to Better Visualize Hyperspectral Data |
| 13:05–14:25 | Lunch |
| 14:30–15:40 | Industry Workshop |
| 15:40–17:20 | Session 6. LVQ: Theory and Methods Villmann, T. et al. Investigation of Activation Functions for Generalized Learning Vector Quantization Saralajew, S. et al. Robustness of Generalized Learning Vector Quantization Models against Adversarial Attacks Heusinger, M. et al. Passive Concept Drift Handling via Momentum Based Robust Soft Learning Vector Quantization Biehl, M. et al. Prototype-Based Classifiers in the Presence of Concept Drift: A Modelling Framework |
| 18:30- | BCN Guided Tour + Gala Dinner |

THE INDUSTRIAL WORKSHOP EVENT

From 14:30 to 15:40, the conference sponsor companies, all of them working on practical applications of ML and AI, will have 10' each to introduce their experiences and the challenges they face in the real market. This will be followed by a moderated round table in which the conference attendees will be encouraged to participate. This activity will be open to the participation of the UPC academic community, including the staff and students of the IDEAI Research Center and the Master in Artificial Intelligence.

PROGRAM

Friday, June 28, 2019

| | |
|-------------|---|
| 09:30–10:30 | Invited talk (Tobias Schreck, Austria) |
| 10:30–11:00 | Coffee break |
| 11:00–13:10 | Session 7. Theory and Methods Fleer, S., Ritter, H. Solving a Tool-Based Interaction Task Using Deep Reinforcement Learning with Visual Attention Coelho D., Barreto, G. Approximate Linear Dependence as a Design Method for Kernel Prototype-based Classifiers Stiverson, S. et al. Subspace Quantization on the Grassmannian Geweniger T., Villmann, T. Variants of Fuzzy Neural Gas Szadkowski, R. et al. Autoencoders Covering Space as a Life-Long Classifier Oualid, A.M. et al. Soft Subspace Topological Clustering over Evolving Data Stream |
| 13:15–14:40 | Lunch |
| 14:45–16:25 | Session 8. SOM: Practical Applications, part II Olteanu. M. Lamirel, J.C. When Clustering the Multiscalar Fingerprint of the City Reveals its Segregation Patterns Alves Santos, L. et al. Self-Organizing Maps in Earth Observation Data Cubes Analysis Nogales, A. et al. Competencies in Higher Education: a Feature Analysis with Self-Organizing Maps Bai, Z. et al. Using SOM-based Visualization to Analyze the Financial Performance of Consumer Discretionary Firms |
| 16:25:17:20 | Session 9. Life Science Applications, part II Jansen, C. Mortazavi, A. Progressive Clustering and Characterization of Increasingly Higher Dimensional Datasets with Living Self-Organizing Maps Rodríguez-Bazaga, A. Vellido, A. Network Community Cluster-Based Analysis for the Identification of Potential Leukemia Drug Targets Tokutaka, H. et al. Simultaneous Display of Front and Back Sides of Spherical SOM for Health Data Analysis |
| 17:20– | Conference Closing |

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WIFI ACCESS

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WEBSITE

<https://wsom2019.cs.upc.edu>

A detailed interactive program is available at
<https://easychair.org/smart-program/WSOM2019>

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