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THIRD STATISTICAL LEARNING FOR SIGNAL AND IMAGE PROCESSING

Franco-Finnish Workshop

Research topic: **Informatics**

Place: **Hotel Zum Grünen Kranz, Rüdesheim am Rhein, Germany**

Institutions involved: **Finnish Society, Idex Paris Saclay**

Dates: **06/10/2021** to **08/10/2021**

Program: **Maupertuis Programme**

PRESENTATION

Following the great success of the Finnish-French Workshops in Helsinki 2018 and Annecy 2019, the third Edition of the Statistical Learning for Signal and Image Processing Workshop was dedicated both to methodological aspects and applications challenges. New statistical learning approaches, methods, theory and tools are urgently required to account for modern complex, dynamic and large-scale settings. For example, the transformation of energy and communication networks necessitate the reliable extraction of information from large-scale dynamic sensor network settings. Further, biomedical signal processing and analysis, image reconstruction, detection and classification require advanced learning methods that provide reliable results with statistical guarantees and high robustness requirements. The main topics of this workshop concern machine learning for robust signal processing and control, biomedical signal and image processing, statistical modelling of sparse, complex and multi-sensor data, graph theory for signal processing in dynamic and large-scale networks, and distributed optimization for smart systems with applications, such as, neuroscience, electric systems, array signal processing.

ACTIVITIES AND OUTCOMES

As an outcome of the previous two editions, they have formed a French-Finnish network of researchers that have frequently visited each other in France and Finland, which has already manifested itself joint research work, as demonstrated in a large number of joint publications in top journals and conferences. For example, recently, three of the organizers of this workshop have jointly organized a Special Issue on Statistical Signal Processing Solutions and Advances for Data Science: Complex, Dynamic and Large-scale Settings in the Elsevier Journal Signal Processing. The Collaboration PhD Student Research Workshop Session allocated time to strengthening the collaborations between French and Finnish researchers and to consolidate and extend an excellence French-Finnish network in the domains of statistical learning, signal and image processing. Kicked off by the session, and continued over the last weeks via video conferencing, this workshop formed the nucleus for French-Finnish Groups to collaborate to apply to European Union Grants. In particular, during the workshop multiple common research interests and opportunities between PhD students have been identified.

But not only that, by generating a sufficiently large critical mass, the workshop enables larger French-Finnish led consortia that address, for example, research problems under the Horizon Europe Framework of the European Union. First steps towards a joint application have been taken and will potentially lead to a further consolidation of the research network.