

Title:

Representation learning for transfer and collaborative approaches

Aims and scope:

Data Clustering is a fundamental task in the process of knowledge extraction from databases that aims to discover the intrinsic structures in a set of objects by forming clusters that share similar features. Over the past two decades, these tasks have become even more challenging when the available data sets became more complex with the introduction of multi-view data sets, distributed data, data streams and data set having different scales of structures of interest (e.g. hierarchical clusters). Because of this increased complexity in an already hard problem, new approaches are needed.

Within this context, the purpose of our session is to bring together researchers working on unsupervised frameworks learning involving a decomposition of the clustering task into several sub-problems. The decomposition can involve algorithms working on different subsets of a multi-view or a distributed data set, searching for different scales of interested in the same data to find hierarchical structures, analyzing in parallel different time periods of a data stream, etc... These approaches are a recent area of research with a large number of applications to tackle difficult problems, such as clustering of distributed data, multi-expert clustering, multi-scale clustering analysis or multi-view clustering. Most of these frameworks can be regrouped under the umbrella of transfer and collaborative learning, the aim of which is to reveal the underlying structure of the data by sharing information between algorithms working on different sub-problems.

Topics of interest include, but are not limited to the following:

- Multi-view learning
- Multi-task learning
- Collaborative clustering
- Collaborative learning
- Cooperative learning
- Transfers learning
- Representation learning
- Modular approaches
- Distributed data
- Task decomposition

Organizers:

Prof. Younès Bennani received B.S. degree in Mathematics and Computer Science from Rouen University, in 1987. Subsequently, he received the M.Sc. and the Ph.D. degree in Computer Science from The University of Paris 11, Orsay, in 1988 and 1992, respectively. He joined the Computer Science Laboratory of Paris-Nord (LIPN-CNRS) at Paris 13 University in 1993 as Assistant Professor. In 2001, he was appointed to a Full Professor of computer science in the Paris 13 University. Prof. Younès Bennani research interests are in theory of Connectionist Learning (Neural Networks), Statistical Pattern Recognition and Datamining. He is also interested in the application of these models to speech/speaker/languages/images recognition, diagnosis of complex systems, users modelling, web mining and call mining. Prof. Younès Bennani's areas of expertise are unsupervised learning, cluster analysis, dimensionality reduction, features selection, features construction, data visualization, and large-scale data mining. He has published 2 books and approximately 150 papers in refereed conferences proceedings or journals or as contributions in books. He is a senior member of the IEEE.

Guénaél Cabanes is associate professor at the Computer Science Laboratory of Paris Nord (LIPN), University of Paris 13. His research focuses on unsupervised learning, with a particular interest in collaborative learning as well as dynamic data and detection of novelties. He has participated in several research projects since the beginning of his career and has 13 publications in international journals and 25 articles in international conferences. He is a member of Editorial Committees and Editor of International Newspapers such as Pattern Recognition, Transactions on Neural Networks or Neurocomputing and is a member of Program and Organization Committees in international conferences such as ICDM, WCCI and IJCNN... He is also a reviewer for the National Science Center of Poland for the evaluation of research projects.

Nistor Grozavu is associate professor at the Computer Science Laboratory of Paris Nord (LIPN), University of Paris 13. He is a member of the Editorial and Program Committee of several Journals and Conferences: Journal of Pattern Recognition in Physics, IEEE Transactions on Multimedia, IEEE WCCI, IJCNN, EGC, ICMLA ... He has participated and participated in numerous related Research Projects: unsupervised and collaborative learning applied to fraud detection, segmentation of satellite images, opinion detection, etc. Nistor Grozavu is also co-organizer of several workshops and special sessions in various international conferences (IJCNN, ICONIP, ...). He has been invited to several international universities for research and teaching collaboration, ie Kobe University, Kobe, Japan, Vyatka State University, Kirov Russia, Technical University of Moldova, Chisinau, Moldova, ...

Basarab Matei is associate professor at the Computer Science Laboratory of Paris Nord (LIPN), University of Paris 13. He holds a PhD in Applied Mathematics from Paris-6 University, a Master's degree in Applied Statistics and Optimization from the University of Bucharest. He is responsible for the teaching related to data analysis, statistical learning, dimension reduction, learning complex data representations. His research interests focus on the theoretical foundations as well as the applications of artificial learning and data science, in particular for problems of representations, optimization, as well as for unsupervised neural networks.