

Special Session on Active Learning and Experimental Design (ALED)

In conjunction with
International Joint Conference on Artificial Neural Networks (IJCNN 2013)

Introduction:

Aims: This special session offers a meeting opportunity for academics and industry researchers belonging to the communities of Computational Intelligence, Machine Learning, Experimental Design, Causal Discovery, and Data Mining to discuss new areas of active learning and experimental design, and to bridge the gap between data acquisition or experimentation and model building. The focus is on how active sampling and data acquisition should contribute to the design and modeling of highly intelligent learning systems.

Machine learning prescribes methods and algorithms, which allow a model to learn a behavior from examples. Active learning gathers methods, which select subsets of examples or variables to be used to build a training set for the predictive model. Strategies must be devised to select a subset of examples and variables as small and informative as possible for a task at hand. As a special case, we consider the problem of causal discovery in which one must uncover variables susceptible of influencing a target of interest quantitatively, due to a cause-effect relationship, and check such hypothesis experimentally. Research on incremental experimental design is particularly relevant to this call.

When designing active learning algorithms for real-world data, some specific issues are raised. The main ones are scalability and practicability. Methods must be able to handle high volumes of data, in spaces of possibly high-dimension, and the process for labeling new examples by an expert must be optimized. This includes making "de novo" queries or equivalently for causal systems "manipulating" given variables.

Publication opportunities: Papers should be submitted to IJCNN. We encourage papers that describe applications of active learning in real-world. In the industrial context, the main difficulties met and the original solutions developed, have to be described. Authors of papers accepted in the ECML-ALRA workshop (which do not have any "referenced" proceedings) are also encouraged submit a long version of their paper (up to the maximum number of pages at IJCNN). We are also planning a special topic of JMLR on the theme of experimental design to uncover causal relationships, which will be announced shortly.

Topics of interest include:

- Active Learning
- Experimental Design
- Incremental Learning
- On-line learning
- Case Studies of Active Learning

Past events:

- Active, Incremental and Autonomous Learning: Algorithms and Applications, Special Session WCCI 2012, Brisbane, Australia [\[link...\]](#)
- Active Learning in Real-world Applications, Workshop ECML-PKDD 2012, Friday, September 28, 2012, Bristol, UK [\[link...\]](#)

- Active Learning and Experimental Design Workshop, May 16, 2010, Chia Laguna Resort, Sardinia, Italy, in conjunction with AISTATS 2010 [[link...](#)]
- Active and Autonomous Learning, Special Session WCCI 2010, July 19-23, 2010, Barcelona, Spain [[link...](#)]

Organizing committee (tentative):

Matthias Adankon (Ecole de technologie supérieure de Montréal, Canada)

Anastassia Angelopoulou (University of Westminster, UK)

Jorge Azorín (University of Alicante, Spain)

Alexis Bondu (EDF, France)

Marc Boullé (Orange, France)

Gavin Cawley (University of East Anglia, UK)

Gideon Dror (Academic College of Tel-Aviv-Yaffo, Israel)

Cyril De Runz (University de Reims)

Hugo Jair Escalante (INAOE, Mexico)

Emmanuel Faure (Institut des systèmes complexes, Paris, France)

Nistor Grozavu (University Paris 13)

Mustapha Lebbah (University Paris 13)

Seiichi Ozawa (Kobe University, Japan)

Alexandra Psarrou (University of Westminster, UK)

Peter Roth (Graz University, Austria)

Amir Reza Saffari Azar (Graz University of Technology)

Alexander Statnikov (New York University, USA)

Nicolas Lachiche (CNRS, France)

Wenbin Cai (Shanghai Jiao Tong University)

José Garcia (University of Alicante, Spain)

Vincent Lemaire (Orange Lab, France)

Isabelle Guyon (Clopinet, USA)

Important dates:

- Paper submission: February 22, 2013
- Notification of acceptance: April, 2013
- Camera-ready: May 1, 2013
- IJCNN 2013 Conference: August 4-9, 2013

Important - Submission Guidelines:

- Please follow the regular submission guidelines of IJCNN 2013 <http://www.ijcnn2013.org/submission.php> and submit your paper to the paper submission system. **Be careful to select the Special Session S07: “Active Learning and Experimental Design (ALED)” from the "S. SPECIAL SESSION TOPICS" category as the “main research topic”.** After your submission, notify the chairs of your submission by sending email to: vincent.lemaire@orange.com.

Contact:

Email: vincent.lemaire@orange.com, jgarcia@dtic.ua.es, guyon@clopinet.com, alexis.bondu@edf.fr

Organizers:

Names:

Vincent Lemaire (Orange Labs, France) – vincent.lemaire@orange.com was born in 1968 and he obtained his undergraduate degree from the University of Paris 12 in signal processing and was in the same period an Electronic Teacher. He obtained a PhD in Computer Science from the University of Paris 6 in 1999. He thereafter joined the R&D Division of France Télécom where he became a senior expert in data-mining. His research interests are the application of machine learning in various areas for telecommunication companies with an actual main application in data mining for business intelligence. He developed exploratory data analysis and classification interpretation tools. Active learning and data-space exploration are now his main research interests. He obtained his Research Accreditation (HDR) in Computer Science from the University of Paris-Sud 11 (Orsay) in 2008.

Workshop or Special session organizations:

- Incremental classification and novelty detection - CIDN - workshop EGC 2013
- Active Learning in Real-World Applications - ALRA - workshop ECML 2012
- Active and Incremental Learning (AIL) - workshop ECAI 2012
- Incremental classification and novelty detection - CIDN - workshop EGC 2012
- Active, Incremental and Autonomous Learning: Algorithms and Applications (AIAL) - IJCNN 2012 [...]
- Workshop on Unsupervised and Transfer Learning - ICML 2011
- Autonomous and Incremental Learning (AIL) - IJCNN 2011
- Active and Autonomous Learning (AAL) - IJCNN 2010
- Fast scoring on a Large Database - KDD 2009

José García-Rodríguez (University of Alicante, Spain) - jgarcia@dtic.ua.es received his Ph.D. degree, with specialization in Computer Vision and Neural Networks, from the University of Alicante (Spain). He is currently Associate Professor at the Department of Computer Technology of the University of Alicante. His research areas of interest include: computational intelligence, computer vision, robotics, man-machine interfaces, ambient intelligence, parallel and multicore architectures and visual surveillance systems. He has authored +50 publications and revised papers for several journals like Neurocomputing, Applied Softcomputing, Image Vision and Computing, IET on Image Processing, SPIE Optical Engineering and many others, chairing several sessions in IJCNN and IWANN, also participating in program committees of several conferences including IJCNN, ICRA, ICANN, IWANN, KES, ICDP and others.

Workshop or Special session organizations:

- Active, Incremental and Autonomous Learning: Algorithms and Applications (AIAL) - IJCNN 2012
- Autonomous and Incremental Learning (AIL) - IJCNN 2011
- Active and Autonomous Learning (AAL) - IJCNN 2010

Isabelle Guyon – Isabelle Guyon is an independent engineering consultant who specializes in statistical data analysis, pattern recognition, and machine learning techniques. Prior to starting her consulting practice in 1996, Isabelle Guyon was a researcher at AT&T Bell Laboratories, where she pioneered applications of neural networks to pen computer interfaces and invented Support Vector Machines (in collaboration with B. Boser and V. Vapnik), which is now a textbook method and is widely used. She is vice-president of the Unipen foundation and an action editor for the Journal of Machine Learning Research. In 2005 she received an award from the US National Science Foundation to organize a competition on model selection and in 2007 to organize a competition on causal discovery. She has co-organized 18 workshops and 10 machine learning competitions, see <http://chalearn.org/challenges> (including 4 for IJCNN/WCCI). This year she organized a large competition co-sponsored by DARPA/NSF/Microsoft on gesture recognition using Kinect. She has been 4 times competition co-chair of IJCNN or WCCI (2006, 2007, 2008, 2010). She is the head of the benchmark and competition taskforce of the IEEE CIS standards committee <http://cis.ieee.org/standards-committee.html>.

Alexis Bondu (EDF R&D - France) - received a PhD degree on computer science from the university of Angers (France) in 2008. His thesis addressed the Active Learning problem in general, and focused on the compromise between the "exploitation" of the current classifier and the "exploration" of the input space. This work was carried out in partnership with Orange Labs (Lannion - France). Alexis Bondu is currently a researcher in the team "Statistics and Decision-making Tools" at EDF R&D (Clamart - France). His main research topics are related to Machine Learning, with a particular focus on Supervised Learning, Data Streams and Temporal Data. In particular, he is interested by change detection in data streams and by highly informative symbolic representation of time series.

Tutorial co-organization:

- Data Grid Models : Principle, Evaluation, Algorithmes and Application - invited tutorial at EGC 2013