The 15th IEEE International Conference on Machine Learning and Applications (IEEE ICMLA'16), Los Angeles, USA
18-20 December 2016
www.icmla-conference.org/icmla16

Special Session on
Probabilistic Inference for Machine Learning

AIMS AND SCOPE

Machine learning theory and practice is increasing in complexity as methods are applied to more challenging problems. The principal focus of machine learning has been on maximizing decision performance. For problems involving the control and allocation of resources there is a need for systems to be accurate and robust in estimation of the uncertainty associated with decisions. Probabilistic inference focuses on proper calibration of probabilities and minimization of fluctuations in the estimates. Assessment of the accuracy using the logarithmic scoring rule provides grounding in the rigor of information theory. To satisfy this requirement methods which manage the accuracy and robustness of low probability phenomena are of particular importance. Generalized assessments using for instance the Renyi or Tsallis entropies, which can provide additional insight into the robustness of algorithms, are of interest. Papers are sought which evaluate the ability of Markov Chain Monte Carlo, probabilistic programming, and other advanced methods to achieve accurate, robust probability inference. Advances in this area are important for scientists, engineers, and other professionals seeking to apply the benefits of machine learning to complex problems and systems.

The goal of this session is to bring together professionals, researchers, and practitioners in the area of probabilistic inference to present, discuss, and share the latest findings in the field, and exchange ideas that address the challenges and implications of accurate, robust machine learning methods.

The special session is open to everybody. Topics for this session include, but are not limited to:

- ❖ Assessment of the accuracy and robustness of probabilistic forecasts
- ❖ Algorithm design which improves the accuracy of machine learning methods
- ❖ Application of robust probabilistic inference to complex systems
- ❖ Information theoretic analysis of machine learning methods
- ❖ Estimators for the average probabilistic inference
- ❖ Role of proper and local scoring rules in probabilistic assessment
- ❖ Impact of robustness in application of machine learning methods
- ❖ Inference engine design which assures accuracy and robustness

Papers should be submitted for this special session at the regular paper submission website (http://www.icmla-conference.org/icmla16/). Papers should not exceed a maximum of 6 pages (including abstract, body, tables, figures, and references), and should be submitted as a pdf in 2-column IEEE format. Detailed instructions for submitting the papers are provided on the conference home page.

Special Session Chair
Dr. Kenric Nelson
Boston University and Raytheon Company, USA

Program Committee Members:
Tim Zajic   Raytheon Company, USA
Brian Scannell   Nanigans, USA

Important Dates:
Paper Submission Deadline   **August 6th, 2016**
Notification of Acceptance **September 7th, 2016**
Camera-Read Papers   **October 1th, 2016**

If you have any question about this session, please do not hesitate to ask your question to kenricpn@bu.edu