JOINT SEMINAR

Structure Learning in Deep Learning
By
Prof. Pascal Poupart
Professor, David R. Cheriton School of Computer Science
University of Waterloo
****

Date: 20 November 2017 (Monday)
Time: 4:00pm
Venue: LT-F (Lift 25-26)

Abstract

The goal of data science is to extract insights from unstructured and complex data. This often hinges on the use of a good representation where suitable features can simplify tremendously the extraction of knowledge. Traditionally, features were handcrafted based on domain knowledge. However, recent advances in deep learning have shown that it is often better to use a deep structure in which features are automatically learned from data. This has completely revolutionized computer vision, speech recognition and natural language. That being said, feature engineering is now replaced by architecture engineering since practitioners spend enormous time adjusting the architecture and hyperparameters by trial and error. Hence there is a need for techniques to automatically learn the structure and hyperparameters of networks. In this talk, I will show how to automatically learn the structure of a special class of deep neural networks known as sum-product networks from streaming data. This will be demonstrated in variety of domains where it is unclear what architecture might work well.

Speaker's Profile

Pascal Poupart received the B.Sc. in Mathematics and Computer Science at McGill University, Montreal (Canada) in 1998, the M.Sc. in Computer Science at the University of British Columbia, Vancouver (Canada) in 2000 and the Ph.D. in Computer Science at the University of Toronto, Toronto (Canada) in 2005. His research focuses on the development of algorithms for reasoning under uncertainty and machine learning with application to Assistive Technologies, Natural Language Processing and Telecommunication Networks. He is most well known for his contributions to the development of approximate scalable algorithms for partially observable Markov decision processes (POMDPs) and their applications in real-world problems, including automated prompting for people with dementia for the task of handwashing and spoken dialog management. Other notable projects that his research team are currently working on include deep learning with clear semantics, structure learning, personalized transfer learning, conversational agents, adaptive satisfiability and stress detection based on wearable devices.

(con't)

Pascal Poupart received a Cheriton Faculty Fellowship (2015-2018), a best student paper honourable mention (SAT-2017), an outstanding collaborator award from Huawei Noah's Ark (2016), a top reviewer award (ICML-2016), the best main track solver and best application solver (SAT-2016 competition), a best reviewer award (NIPS-2015), an Early Researcher Award from the Ontario Ministry of Research and Innovation (2008), two Google research awards (2007-2008), a best paper award runner up (UAI-2008) and the IAPR best paper award (ICVS-2007). He also serves as associate editor of the Journal of Artificial Intelligence Research (JAIR) (2017 - present), member of the editorial board of the Journal of Machine Learning Research (JMLR) (2009 - present) and guest editor for Machine Learning Journal (MLJ) (2012 - present). He routinely serves as area chair or senior program committee member for NIPS, ICML, AISTATS, IJCAI, AAAI and UAI. He serves as technical advisor for Huawei Technologies, ElementAI, TalkIQ and ProNavigator. His research collaborators include Huawei Technologies, Google, Intel, Kik Interactive, In the Chat, Slyce, HockeyTech, ProNavigator, the Alzheimer Association, the UW-Schlegel Research Institute for Aging, Sunnybrook Health Science Centre and the Toronto Rehabilitation Institute.

All are Welcome!

Jointly hosted by Big Data Institute and
Department of Computer Science & Engineering