Workshop on
"Big Data and Deep Learning"
7th -8th April 2018

The NorthCap University, Gurugram

Day 1: 7th April 2018

Session 1: Machine Reasoning

Dr. L V (Venkat) Subramaniam, STSM & Senior Manager,
IBM India Research Laboratory, New Delhi, India
Seminar Hall, Time: 2:30 PM to 4:30 PM

The NorthCap University, Gurugram

Abstract:
A goal of AI is to achieve General AI that enables machines to do complex learning, reasoning and decision making. This includes gaining knowledge from reading and interaction, reusing and augmenting that knowledge, and reasoning about that knowledge to solve new problems and to flexibly execute business processes and workflows. I will describe work towards significantly advancing symbolic, probabilistic, linguistic, and neural net reasoning that moves towards taking advantage of machine learning ubiquitously.

Day 1: 7th April 2018

Session 2: Cogniculture - Collaborative Cognition in Social Machines

Sudhanshu Shekhar Singh
Lead - Collaborative Cognition/Collaborative Decision Making
Analytics and Optimization Research
IBM Research India Delhi, India
Seminar Hall, Time: 2:30 PM to 4:30 PM

The NorthCap University, Gurugram

Abstract:

We define Cogniculture as the art, science, technology and business involved in the cultivation and breeding of cognitive agents (human and machines) living in a complex adaptive ecosystem and collaborating on human computation for producing essential ingredients (food, energy, safety etc) necessary for enhancing [humanity-centric] social goods while promoting sustenance, survival, and evolution (growth) of the agents' (survive-live-thrive) lifecycle. Scientific study of

Cogniculture can be called Cognicultural Science, as opposed to Cognitive Science which is defined as the interdisciplinary, scientific study of the mind and its processes. As social machines begin to become all pervasive, it's imperative that they need to acquire and exhibit the traits that vastly improve their acceptability and adaptability in humanity-centric complex adaptive eco-systems. Human computation is the key differentiator to not only improve the quotient of trust, reciprocity and likeability but also allay the fears and concerns associated with proliferation of cognitive systems. In this initiative, we aim to develop next-gen social machines to acquire necessary socio-cultural adaptability skills to survive (e.g. protect from environmental threats), live (e.g. achieve self-sustenance), and thrive (e.g. co-create far superior social welfare) in such a civilization. The innovations and development in this area entail cross discipline research including Sociology, Psychology, Cognitive Sciences, Neuro Sciences, Physiology

Day 2: 8th April 2018

Session 3: Building Conversational Systems

Sachindra Joshi, Senior Technical Staff Member,
IBM Research India Delhi, India
Seminar Hall, Time: 11:00 AM to 2:00 PM
The NorthCap University, Gurugram

Abstract:

In this session, We would start with building question answering systems to interactive question answering systems to building conversational systems. Building conversation models have been seen as a machine translation problem and deep learning models such as sequence to sequence models have been employed to build them. We would talk about their limitations and how models can be extended in various ways to overcome some of these problems. We would also talk about the various dialog frameworks that have been proposed by various industries such as Microsoft bot framework, IBM Watson Conversation Service and Google Dialoflow and how ML approaches can be used to build them in a semi-automatic manner.

Day 2: 8th April 2018

Session 4: Dialog generation

Harshit Kumar, IBM Research India Delhi, India
Seminar Hall, Time: 11:00 AM to 2:00 PM
The NorthCap University, Gurugram

Abstract:

The utility of additional semantic information for the task of next utterance selection in an automated dialogue system is the focus of study in this paper. In particular, we show that additional information available in the form of dialogue acts --when used along with context given in the form of dialogue history-- improves the performance irrespective of the underlying model being generative or discriminative. In order to show the model agnostic behavior of dialogue acts, we experiment with several well-known models such as sequence-to-sequence encoder-decoder model, hierarchical encoder-decoder model, and Siamese-based models with and without hierarchy; and show that in all models, incorporating dialogue acts improves the performance by a significant margin. We, furthermore, propose a novel way of encoding dialogue act information, and use it along with hierarchical encoder to build a model that can use the sequential dialogue act information in a natural way. Our proposed model achieves an MRR of about 84.8% for the task of next utterance selection on a newly introduced Daily Dialogue dataset, and outperform the baseline models. We also provide a detailed analysis of results including key insights that explain the improvement in MRR because of dialog act information.