Neural Networks for Learning Representations for Dynamic Semantic Relational Data

Mots clés:
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- Ecole doctorale: École Doctorale Informatique, Télécommunications, Électronique de Paris
- Domaine scientifique principal: Divers

Résumé du projet de recherche (Langue 1)

Learning representations is an emerging research direction in the statistical learning community. It aims at discovering the latent factors underlying the generation of complex data. It is at the heart of several research directions in machine learning and it is supported by the recent success of deep neural networks (Deep Learning). The recent creation (2013) of a conference dedicated to this topic (International Conference on Learning representations) reflects its growing importance. The work has mainly focused on static data. The aim of the thesis is to study representation learning models for complex and dynamic relational data. The methods developed are intended to be generic, but a prime target will be the analysis of semantic relational data. By this, we refer to a broad class of objects involving data consisting of items with their associated semantic characteristics, linked by relations. This includes social media sites, information networks, recommendation sites and many other objects. Semantic relational data are characterized by semantic and relational heterogeneity; they are usually composed of multiple types of items and multiple relations between these items; and by their dynamicity (their structure and content continuously evolve). This class of object shares many common characteristics and raises a set of generic data analysis problems for which there is no answer today. The thesis project is organized around two main directions: learning in heterogeneous networks and learning dynamics and targets two families of applications, time dependent recommendation systems and analysis of content diffusion in social data.

Résumé du projet de recherche (Langue 2)
Informations complémentaires (Langue 1)

Ce sujet est aujourd'hui au cœur d'une collaboration active avec Sheng Gao de la (Beijing University of Post and Telecommunication) - plus particulièrement sur les aspects hétérogènes - ainsi qu'avec Marco Gori de l'université de Sienne (Italie) sur les aspects plus dynamiques. Des séjours dans ces deux universités sont à prévoir durant la thèse.