

Machine Learning and Data Mining

Rapidly-growing “Big Data” resources have posted many interesting new challenges for machine learning, with the data being large, loosely labeled, highly diverse, complex and often relationally structured. We have proposed a diverse range of machine learning approaches, including feature learning, deep learning, sparse modeling, latent factor analysis, semi-supervised learning, multi-task learning, and others, to handle different types of data complexities that are urgent to be addressed in this domain. We strive toward building and sharing benchmarked datasets and open-source releases of research prototypes.

Applications in Biomedicine and More

My group takes an inter-disciplinary approach, combining ideas from statistical machine learning, computational biology, computer architecture, secure computation and language technologies. Over years we have had valuable opportunities to work on many practically important applications, covering multiple research fields, such as proteomics, cancer genomics, medical informatics, bio-text mining, structural biology, immunology, more traditional text mining topics, like information extraction, ad hoc information retrieval and text/image/video labeling and recently on cloud system analysis and sensor data mining.

RECENT RESEARCH DEVELOPMENTS

- Y. Qi, et al, (2009) "Semi-Supervised Sequence Labeling with Self-Learned Feature" IEEE International Conference on Data Mining (ICDM)
- Y. Qi, et al, (2010) "Semi-Supervised Multi-Task Learning for Predicting Interactions between HIV-1 and Human Proteins", (Bioinformatics)
- Y. He, Y. Qi, et al, (2012) "Learning the Dependency Structure of Latent Factors", (NIPS)
- S.M. Preum, J. Stankovic, Y. Qi (2015) "MAPer: A Multi-scale Adaptive Personalized Model for Temporal Human Behavior Prediction ",(CIKM)
- Z. Lin, J. Lanchantin, Y. Qi, (2016) "MUST-CNN: A Multilayer Shift-and-Stitch Deep Convolutional Architecture for Sequence-based Protein Structure Prediction", (AAAI)

RECENT AWARDS

- NSF CAREER Award (2015-2020)
- Best Paper Award @ International Conference on Body Area Networks (BodyNets) – 2014
- Group Ph.D. student, "Ritambhara Singh" who has just been awarded the UVA L. William Ballard Fellowship for 2015.
- Text Retrieval Conference (TREC) Medical Record Retrieval Competition. Second Place - 2012

SEAS Research Information

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