Roll of Unified Graph Analysis Platforms

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ABSTRACT

A unified graph engine has been playing increasingly critical roles in many applications, especially for those requiring cross-domain analysis and near real-time decision-making on massive data, aiming to offer integrated and efficient end-to-end capabilities in concurrent graph data query, interactive graph analysis, and large scale graph-based (deep) learning. However, there is barely a unified graph system for enterprise use to the best of our knowledge. Simply assembling some frameworks/libraries together can result in significant performance degradation, due to the sparsity of graph data and irregular data access patterns, which adversely impacts its adoption in industry. In this talk, we will exemplify the challenges using our three efforts on making metropolitan districts smart within an integrated engine, which consist of managing a complex synergy of heterogeneous urban data via property graphs, modeling traffic flow patterns from the stored data through heterogenous information network analysis, and predicting traffics interactively using emerging graph neural networks. Although smart city is projected to become one of the most promising scenarios in the AI era, the unified graph engine can address many other domains such knowledge graph analysis and multi-modality medical research. We will address in the talk the progress towards the above three scientific directions and also point out relevant future research opportunities from the industrial perspective.

BIOGRAPHY

Yinglong Xia is a chief architect in Futurewei Technologies, Inc., working on AI and graph platform services. Prior to that, he was a technical lead at IBM T.J. Watson Research Center, exploring graph database and reasoning frameworks. He received PhD at USC and MS from Tsinghua University. He has solid experience in both research and product development. He has published 60+ technical papers and filed 30+ patents. He serves as a technical advisory committee (TAC) member in Linux Foundation, a board member of LDBC, an associate editor of IEEE trans. on Knowledge and Data Engineering (TKDE), and IEEE trans. on Big Data (TBD); he is a general co-chair of IEEE HiPC'19, a vice co-chair of IEEE BigData'19, a TPC member of KDD'19, CIKM'19, VLDB'20, and ICDE'19, etc.

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