Topic (English): **GSA: Facilitating Intra-Subject Study and Inter-Subject Development with Course Knowledge Graphs**

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Biography
(Please provide in paragraph form within 500 words. Either/ Both Chinese and/or English are accepted.)

Qing Li is a Chair Professor and Head of the Department of Computing, the Hong Kong Polytechnic University. He received his B.Eng. from Hunan University (Changsha), and M.Sc. and Ph.D. degrees from the University of Southern California (Los Angeles), all in computer science. His research interests include multi-modal data management, conceptual data modeling, social media, Web services, and e-learning systems. He has authored/co-authored over 500 publications in these areas, with over 36300 citations and H-index of 77 (source: Google Scholars). He is actively involved in the research community and has served as an associate editor of a number of major technical journals including IEEE Transactions on Artificial Intelligence (TAI), IEEE Transactions on Cognitive and Developmental Systems (TCDS), IEEE Transactions on Knowledge and Data Engineering (TKDE), ACM Transactions on Internet Technology (TOIT), Data Science and Engineering (DSE), and World Wide Web (WWW) Journal, in addition to being a Conference and Program Chair/Co-Chair of numerous major international conferences. He also sits/sat on the Steering Committees of DASFAA, ER, ACM RecSys, IEEE U-MEDIA, and ICWL. Prof. Li is a Fellow of IEEE.

Abstract
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Knowledge graphs (KGs) have been actively studied for pedagogical purposes. To depict the rich but latent relations among different concepts in the course textbook, increasing efforts have been proposed to construct course KGs for university students. However, the application of course KGs for real study scenarios and career development remains unexplored and nontrivial. First, it is hard to enable personalized viewing and advising. Within the intricate university curricula, instructors aim to assist students in developing a personalized course selection pathway, which cannot be fulfilled by isolated course KGs. Second, locating concepts that are important to individuals poses challenges to students. Real-world course KGs may contain hundreds of concepts connected by hierarchical relations, e.g., *contain subtopic*, making it challenging to capture the key points. To tackle these challenges, in this talk, we present GSA, a novel system based on course knowledge graphs, to facilitate both intra-course study and inter-course development for students significantly. More specifically, we establish an interactive web system for both instructors to construct and manipulate course KGs, and students to view and interact. To visualize the centrality of a course KG based on various metrics, concept-level advising is designed; we also propose a tailored algorithm to suggest the learning path based on what concepts students have learned. Finally, course-level advising is instantiated with a course network, which indicates the prerequisite relations among different levels of courses, corresponding to the annually increasing curricular design and forming different major streams. Examples will be given to illustrate the effectiveness of GSA.