1. Embedding app-library graph for neural third party library recommendation

Bo Li (1); Qiang He (1); Feifei Chen (2); Xin Xia (3); Li Li (3); Grundy, J. (3); Yun Yang (1)
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Author affiliation: (1) Swinburne University of Technology, Australia (2) Deakin University, Australia (3) Monash University, Melbourne, VIC, Australia
Abstract: The mobile app marketplace has fierce competition for mobile app developers, who need to develop and update their apps as soon as possible to gain first mover advantage. Third-party libraries (TPLs) offer developers an easier way to enhance their apps with new features. However, how to find suitable candidates among the high number and fast-changing TPLs is a challenging problem. TPL recommendation is a promising solution, but unfortunately existing approaches suffer from low accuracy in recommendation results. To tackle this challenge, we propose GRec, a graph neural network (GNN) based approach, for recommending potentially useful TPLs for app development. GRec models mobile apps, TPLs, and their interactions into an app-library graph. It then distills app-library interaction information from the app-library graph to make more accurate TPL recommendations. To evaluate GRec's performance, we conduct comprehensive experiments based on a large-scale real-world Android app dataset containing 31,432 Android apps, 752 distinct TPLs, and 537,011 app-library usage records. Our experimental results illustrate that GRec can significantly increase the prediction accuracy and diversify the prediction results compared with state-of-the-art methods. A user study performed with app developers also confirms GRec's usefulness for real-world mobile app development. (0 refs)
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Uncontrolled terms: embedding app-library graph - neural third party library recommendation - mobile app marketplace - mobile app developers - third-party libraries - TPL recommendation - graph neural network based approach - potentially useful TPLs - GRec models mobile apps - app-library interaction information - accurate TPL recommendations - large-scale real-world Android app dataset - 31 Android apps - 432 Android apps - 752 distinct TPLs - 537 app-library usage records - 011 app-library usage records - real-world mobile app development
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Data Provider: Engineering Village