

FAR: A Novel Fast API Recommendation Algorithm Based on Static Central Annotation and Enhanced Subgraph Evaluation

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Abstract

Driven by the wave of digitalization, Mashup technology provides developers with the opportunity to create unique value-added services by fusing heterogeneous Web APIs. However, the proliferation of Web APIs has introduced significant challenges for developers in building Mashup applications, particularly regarding API compatibility and business logic coordination, rendering API adaptation search both time-consuming and arduous. To address these challenges, this paper proposes an innovative Mashup composition recommendation algorithm, FAR (Fast API Recommendation), which is based on a static center annotation method. By constructing an efficient offline index structure and a unique subgraph evaluation mechanism, the algorithm substantially enhances the accuracy of the recommendation system. Additionally, FAR employs a beam search strategy to optimize subgraph generation speed while avoiding the pitfall of overemphasizing API compatibility at the expense of practicality, thus improving overall recommendation efficiency. Moreover, this paper introduces root node optimization strategies and subgraph weight optimization strategies, offering valuable insights for future research in the Mashup recommendation domain. Through comprehensive experimental evaluations on mashup datasets, FAR demonstrates superior performance over existing mainstream API recommendation and graph search algorithms across multiple metrics, including average running time, number of recommended nodes, precision (MP), recall (MR), and Normalized Discounted Cumulative Gain (NDCG), thereby exhibiting enhanced practicality and performance superiority.

Preamble

Chapter 1 Abstract

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Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv — Machine translation. Verify with original.