

## A Context-Aware Multi-Task Learning Framework for Developer Recommendation in GitHub Issue Triage

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GitHub is most important collaborative tool for the design, development, and maintenance of software projects. In large-scale collaborative software development, manual issue assignment to developers creates management overhead and potential delays in issue resolution. To reduce these challenges many recent researchers are discovered automated issue assignment. The model begins with baseline approaches using TF-IDF features and traditional classifiers. There are two steps. The first step filters candidates, focusing on members within the organization and those actively involved in related projects to ensure the relevance of suggestions. The second step is a ranking process leveraging a Deep Multi-Task Learning (MTL) model, which addresses three tasks concurrently the assignment of developers, issue types, and priorities. This MTL model integrates semantic embeddings from SBERT with individual developer behavior data. Tested on a largescale dataset comprising more than 20,000 GitHub issues, the model obtained a -Top-1 Accuracy of 92.38% and an MRR of 0.9353 in the main assignment task. Besides, the secondary tasks involving issue type and priority classification obtained weighted F1-scores of 0.94 and 0.96, respectively. The successful deployment of the model as a working GitHub app illustrates the effectiveness of the model in offering real-time and relevant recommendations in order to simplify issue triage.

**Keywords:** *Software Engineering, Issue Triage, Developer, Deep Learning Recommendation, Multi Task Learning, Context-Aware Systems*