CASE-BASED RECOMMENDER FOR INTELLIGENT TASK ASSIGNMENT IN SOFTWARE DEVELOPMENT

Tovstokorenko O.Y., Gamzayev R.O., Tkachuk M.V.
National Technical University
«Kharkiv Polytechnic Institute»,
Kharkiv

Modern task management systems (TMS) supports the following processes in any software development life cycle: task creation, visualization, notifications, resources assignment, configurability, and results reporting. TMS is an important part of software project management process, also it serves as the foundation for efficient workflow management in an organizations. One of the most time-consuming and quality important part of this process is task assignment. Case-Based Recommender (CBR) is proposed in this paper to resolve such kind of problems [1].

In order to apply CBR approach in the context of software project management it is necessary to make some additional modifications. The first one is task specification that extracted from TMS data store. We are going to use it as initial source information that depict relationship between tasks and developers who have already solved it. The next step is formatting of class sets, that are used for classification of new tasks in the CBR process. In this approach, a textual task description and developer ID are used as a case. When result set is represented, it is necessary to rank resulting group of developers. It can be done by using data about time of resolving task, amount of reopens (bugs) as a base. Additionally custom rankings for each unique project can be included. The most unexplored part of the described process is formatting a set of resolved cases. This part can be done totally by experts or using clustering methods for selecting some logical parts, afterwards experts just need to underline key words for each cluster.

Cluster topic	Amount of tasks (%)
User Interface	37,3
Context menu	27,8
Diagram generation process	16,1
Exception handling	9,5
Others	9,3

Eclipse system task files from open source were used in order to test the efficiency of clustering within this approach. We are using a simple algorithm based on the Levenshtein distance as a similarity rate.

The fact that it is possible to take satisfying results with the help of simple methods proves that it is possible to automate described part of task assignment process.

There are several issues remaining for our future work. First, clustering tasks approach should be performed and the second, possible sets of metrics for developers ranking has to be considered.

References:
1. Juan A. Recio-Garcia, Derek Bridge, A Case-Based Template Recommender System for Building Case-Based Systems 2008, Department of Software Engineering and Artificial Intelligence, Universidad Complutense de Madrid, Spain,-18p.