

Correctionflows – Using Workflow Engines for Intelligent Correction Processes

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Abstract

Electronic exercise submission systems simplify the submission and distribution processes, as students can hand in their solutions and receive feedback online. Furthermore, some exercises can be assessed automatically by a computer program. Solutions to open-ended questions cannot be corrected automatically in general, but several systems allow a semi-automatic pre-correction for assignments in a specific domain. These systems are mostly re-implementing standard functionality to add a single feature in a completely newly developed system.

A new approach for modularization of correction processes is related to the concept of workflows with the aim to increase the reusability of functionality of those processes. The first step to model the exercise correction process in a workflow engine is to break the process up into atomic evaluation steps. Each evaluation step analyses a certain aspect of the submission and generates corresponding feedback text and a score. Because the processes are designed to correct solutions to open-ended tasks, which in general cannot be corrected fully automatically, each evaluation step can either be an automatic or a manual step. The latter, a so-called "Person-in-the-Loop"-step, may be inserted into the correction process at any position. In effect, the tutor's evaluation may influence the rest of the correction process.

A prototypical implementation based on Windows Workflow Foundation within a Microsoft SharePoint portal platform shows

how an established workflow engine can be used to realize the described approach. If an existing assignment management system is standalone or part of a learning platform which is not based on SharePoint, these correctionflows can be integrated in a service-oriented way.

A next step in this project is the creation of several workflow activities which realize evaluation steps. Therefore, these activities should integrate functionalities of already existent applications, e.g. by using web services or direct application calls. Subsequently, some pilot installations have to show the operational capability of the system. Further evaluation and development should make the creation process for new correctionflows more intuitive. A central database of correctionflows and corresponding activities, including rating and recommendation capabilities, could increase the reusability of those elements as well.