

# Jordan University of Science and Technology

## A Framework for the Computerized Assessment of University Student Essays

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**Abstract:** This paper presents an approach for automatic grading of essays. Student essays are compared against a model or key essay provided by the teacher. The similarity between a student essay and the model essay is measured by the cosine of their contained angle in an n-dimensional semantic space. The model essay is preprocessed by removing stopwords, extracting keywords, assigning weights to keywords to reflect their importance and finally by linking every keyword to a subject-oriented synonym list. The student essay, by comparison, is preprocessed by removing stopwords and then by extracting keywords. The keywords extracted from the model essay and the keywords extracted from students essays together with weights provided by teacher are used to build feature vectors for teacher and students essays. The obtained grade depends on the similarity between these vectors (calculated by using the cosine formula). A simulator was implemented to test the viability of the proposed approach. It was fed with student essays (at the university level) gathered from database management course over three semesters. The results were very encouraging and the agreement between the auto-grader and human grader was as good as the agreement between human graders.