

Short Answer Grading Using Multi-Context Features

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Abstract : Automatic Short Answer Grading is one of the prime applications of artificial intelligence in education. Several approaches involving the utilization of selective handcrafted features, graphical matching techniques, concept identification and mapping, complex deep frameworks, sentence embeddings, etc. have been explored over the years. However, keeping in mind the real-world application of the task, these solutions present a slight overhead in terms of computations and resources in achieving high performances. In this work, a simple and effective solution making use of elemental features based on statistical, linguistic properties, and word-based similarity measures in conjunction with tree-based classifiers and regressors is proposed. The results for classification tasks show improvements ranging from 1%-30%, while the regression task shows a stark improvement of 35%. The authors attribute these improvements to the addition of multiple similarity scores to provide ensemble of scoring criteria to the models. The authors also believe the work could reinstate that classical natural language processing techniques and simple machine learning models can be used to achieve high results for short answer grading.

Keywords : artificial intelligence, intelligent systems, natural language processing, text mining

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