Universiti Teknologi MARA

Automatic Answer Checker Application

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ABSTRACT

Traditional methods of grading descriptive answers are often time-consuming, inconsistent, and prone to human error. The shift to online education during the COVID-19 pandemic further highlighted the need for more efficient and reliable assessment solutions. To address these challenges, this project developed an Automatic Answer Checker application that uses Natural Language Processing (NLP) to automate the grading of multiple-choice, short, and coding answers. The system applies similarity matching using CodeBERT and FuzzyWuzzy to compare student responses with model answers and award fair, partial, or full marks based on defined thresholds. Developed using Agile principles, the application integrates an Android mobile interface, a Python-based NLP backend, and secure cloud storage with Firebase. Real testing showed that the system effectively reduces grading time, improves consistency, and provides instant feedback for students and teachers.

This will not only automate grading but also overcome major limitations of the traditional approaches with higher accuracy, efficiency, and security. The project modernizes educational technology for better engagement and convenience to both educators and students by automating assessments through NLP. This will go a long way in contributing toward improvement in online learning and enhancement in general efficiency related to assessment.

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CHAPTER 1

INTRODUCTION

This chapter provides background information relating to the project. It describes the project's background, problem statement, research questions, research objectives, scope, and significance, which led to this research.

1.1 Background Study

The COVID-19 pandemic has brought a shift toward online education, hence increasing the demand for automated systems that can evaluate students' answers effectively. Tools are widely available for assessing multiple-choice questions but grading descriptive and essay-based answers remains a challenge due to the diverse ways students respond to questions. Each answer will have its unique structure, explanation, and content that may not be easy for a mere technique of pattern matching to operate on such complexity. This calls for the application of Natural Language Processing in most automated grading systems. NLP considers syntax, semantics, and relevance of descriptive answers, hence allowing fair and accurate assessment. This technology has enabled online assessment to grade work efficiently, consistently, and with reduced manual effort. (Ramesh & Sanampudi, 2022).

Descriptive questions are necessary to help students develop better thinking and writing. These help students go deeper into what they are learning. NLP systems analyse responses way beyond the binary correct or incorrect. They rate how correct the content is, whether the grammar is correct, if the punctuation is appropriate, and how coherent the student's reasoning is. This method gives a holistic view of a student's understanding of a subject. It allows