Product Name: AutoCorrect+

Proposal Prepared By:

Gayathri Devi Atluri- gatluri@kent.edu – 811256395

Harika Malneedi- hmalneed@kent.edu-811255562

Sai Haritha Udatha- sudatha@kent.edu- 811238202

Bhanu siva kumar komanna- bkomman1@kent.edu- 811252220

Mani Surya Teja Kota- mkota1@kent.edu- 811262686

Veeraraghava raju Lolabhattu- klolabha@kent.edu- 811301662

Date: 16 February 2024

Abstract

AutoCorrect+ is an innovative solution designed to automate the correction of descriptive answer sheets. This solution attempts to simplify the grading process for educators while guaranteeing accuracy, consistency, and time efficiency by utilizing cutting-edge natural language processing (NLP) and machine learning techniques.

There have been several attempts to use computer science to grade students responses. To do this, the majority of the job, however, makes use of conventional counts or certain terms. Additionally, there aren't enough carefully chosen data sets. In order to automatically assess descriptive responses, we suggest a novel method that makes use of a variety of machine learning, natural language processing, and toolkits, including Wordnet, Word2vec, word mover's distance (WMD), cosine similarity, multinomial naive bayes (MNB), and term frequency-inverse document frequency (TF-IDF). Answers are assessed using solution statements and keywords, and the grades are predicted by training a machine learning model.

Product Vision

Purpose of the Product:

AutoCorrect+ seeks to provide educators with a tool that automates the correction of descriptive answers, reducing manual effort and improving grading consistency.

Target Audience:

This product is intended for educators, educational institutions, and examination boards looking for a reliable and efficient solution for grading descriptive answers.

Long-term Vision:

Our vision is for AutoCorrect+ to become the standard in automating descriptive answer sheet correction, evolving over time to meet the diverse needs of educational curriculum.

Product Value

Benefits:

- Time Efficiency: Significantly reduces the time required for grading.
- Consistency: Ensures uniform and unbiased grading across all assessments.

Cost Analysis:

Time and Effort Investment:

Project Planning and Research:

Time: 2 weeks

Effort: 20 hours

Design and Architecture:

Time: 2 weeks

Effort: 45 hours

Development:

Time: 5 weeks

Effort: 75 hours

Value Proposition:

AutoCorrect+ offers speed, accuracy, and efficiency, making it a compelling value proposition. For educational institutions, the product offers a high return on investment because its advantages vastly exceed its associated costs.

Product Creation Outline

Design Overview:

- Utilizes NLP algorithms and machine learning models for accurate assessment.
- Features a user-friendly interface for easy integration into existing workflows.

Development Plan:

- Dataset collection
- Research and Algorithm Development: Investigate and design effective NLP and machine learning models.
- Tokenization using NLKT
- Training NLP and LSTM deep learning model

Resource Requirements:

Python, Tensorflow, Keras, NLP,Front end web applicaion

Quality and Evaluation

Quality Standards:

The autocorrection feature need to reliably offer precise recommendations, reducing false positives and guaranteeing that the text's intended meaning is maintained.

Testing Procedures:

Continuous Testing: Ongoing testing throughout development phases.

Evaluation Metrics:

- Comparative Analysis of Grading Accuracy: Evaluation metrics include a comparative analysis of the grading accuracy achieved by AutoCorrect Pro against traditional manual grading. This involves quantitative measures to demonstrate the efficiency and effectiveness of the automated grading system.
- User Satisfaction Surveys: Surveys of customer satisfaction are carried out to obtain qualitative input from end users. These surveys aid in determining areas for improvement, evaluating the entire user experience, and determining how satisfied users are with the product.

Conclusion

In conclusion, AutoCorrect+ is positioned to revolutionize the grading process for descriptive answer sheets. Its robust value proposition, comprehensive development plan, quality assurance measures, and thoughtful deployment and maintenance strategies make it a reliable and sustainable solution for the education sector.

References

[1] Manjunath, Ravikumar & Kumar, S. & Guruswamy, Shiva. (2021). Automation of Answer Scripts Evaluation-A Review. 10.1007/978-981-33-6691-6_20.

[2] Papri Chakraborty (2012),"Developing an Intelligent Tutoring System for Assessing Students'Cognition and Evaluating Descriptive Type Answer",IJMER,PP 985-990.

[3] A. S. Oasis, A. E. M, D. Sharma, R. Sada and A. Arya, "Question-Centric Evaluation of Descriptive Answers using Attention-Based Architecture," 2022 12th International Conference on Cloud Computing, Data Science & Engineering (Confluence), Noida, India, 2022, pp. 20-25, doi: 10.1109/Confluence52989.2022.9734117.

[4] Emlyn Hegarty-Kelly and Dr Aidan Mooney. 2021. Analysis of an automatic grading system within first year Computer Science programming modules. In Proceedings of the 5th Conference on Computing Education Practice (CEP '21). Association for Computing Machinery, New York, NY, USA, 17–20. https://doi.org/10.1145/3437914.3437973

[5] Lakshmi, V., and V. Ramesh. "Evaluating students' descriptive answers using natural language processing and artificial neural networks." International Journal of Creative Research Thoughts (IJCRT) 5.4 (2017): 3168-3173.