Project Charter

Essay Grading System

Atul Aneja, Galal Aref, Shivank Tibrewal, Sidhant Chitkara, Tarang Khanna

1) Problem Statement

The need for automated scoring for essays is majorly due to the time constraints of manually grading essays, especially as teacher-student ratios get worse. Furthermore, enabling software to grade essays would also eradicate inconsistency and make essay grading more uniform.

Currently, EdX, an online education platform has started a computer system that asks a human grader to evaluate 100 essays, after which it trains itself to grade the same. The currently available solutions still require manual grading by each new user to teach the software, and it also cannot verify the actual data quoted in the essays. Our solution is to utilize deep learning instead of non deep learning, traditional machine learning methods, predefine the essay standards and remove individual data entry by users, not just to save time but bring standardized quality and consistency into essay grading. The solution also requires implementing a fact checker, which has potential applications in identifying fake news as well.

2) Project Objectives

(a) Clear and well-defined list of project objectives

Our Essay Grading solution will be a web app, where users can input a text file and be provided with a grade. The grade will need sufficient reasoning provided alongside, and we can break our grading analysis into different components:

- Grammar and language checking component
- Fact checking component (Data verification)
- Component to analyze non language parts of the essay such as context, theme consistency, and links between the title and content

The web app should weight these components with appropriate importance to provide a final grade with feedback to the user.

3) Stakeholders

1. Users:
    a. Students that want to see how well their essays might do prior to deadlines
    b. Students that are self learning and need a reliable form of grading
    c. Schools that do not have enough teachers for grading
    d. Schools/teachers that want to verify and normalize their grading
2. Developers: Atul Aneja, Galal Aref, Shivank Tibrewal, Sidhant Chitkara, Tarang Khanna
3. Project Manager: Tarang Khanna
4. Project Owner: The development team working on the project.

4) Deliverables

1. Grading essay deep learning model component
2. A web based app that can grade essays and provide feedback to users utilizing the grading essay component

Platforms and frameworks to be used:

- Keras, a neural network library
- TensorFlow, a tensor manipulation library to use with Keras
- React for web app frontend
- Python flask for backend (API)