Team Hickory: English Language Learning Evaluation

Motivation

Effective written communication is a crucial skill across all disciplines. It requires practice to master. Unfortunately, students don't get enough opportunities to do so. Since grading written assignments is time intensive — especially when one teacher is responsible for an entire classroom — teachers often limit such assignments. This curtails students' opportunities to practice, receive feedback and develop this important skill. The problem is further exacerbated for students who are learning English as a second language, often called English language learners (ELLs), as they require more practice than others. To address this problem, we built an automated essay grader that compares the writing of ELL students to their peers. With the time saved by using an automated grader, teachers can devote more energy to tailoring assignments to their students' needs.

Key Performance Indicators

Build a model with the following characteristics:

- Assigns grades to essays in 6 categories: cohesion, syntax, vocabulary, phraseology, grammar and conventions.
- Has low error (measured in average RSME) across the categories.
- Grades an essay within a few seconds.

Results

We built a GUI that allows the user to enter a short essay, click a button and receive grades for the essay in each of the six categories. The grading takes on average 3.5 seconds after submission on an average laptop. The model chosen to calculate the grades has a lower error than the baseline model in all individual grading categories, as well as on average. It has a 1.31 average RSME compared to 1.77 of the baseline model.

Category	**Hickory Model RSME**	**Baseline Model RSME**
Cohesion	1.28	1.81
Syntax	1.09	1.66
Vocabulary	1.02	1.57
Phraseology	1.25	1.78
Grammar	1.37	1.97
Conventions	1.11	1.83
Average	1.19	1.77

We also compared our chosen model to other standard classification models, all of which had higher error than our chosen model. These models had average RSME values of 2.37, 1.31, 1.40, 2.51 and 1.53.