Automatic CEFR Level Prediction for Estonian Learner Text

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What is the paper about?

- We developed an approach to predict the CEFR level of texts written by language learners in Estonian.
- It is a data-driven, machine learning approach
  - ... informed by linguistic knowledge (morphology, parts-of-speech etc.,)
  - ... uses publicly accessible data and tools.

Research Questions:

1. **Prediction**: How accurately can we predict the CEFR level for a learner text?
2. **Understanding**: What linguistic properties are more prominent between proficiency levels?
Why do we want to do this?

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   ▶ for placement tests at a language teaching institute
   ▶ as a feedback aid to students learning a new language
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   ▶ Do learners struggle with morphology in the beginning?
   ▶ As proficiency increases, does lexical proficiency increase or decrease?
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3. ...and of course, it's fun!
Estonian primer

- Estonian is agglutinative. Word forms can be formed by joining the morphemes together.
  - e.g., jalgades → jalga+de+s (stem for foot + plural marker + inessive case marker)
- It is fusional i.e., word forms can be formed by changing the stem.
  - e.g., jalg (foot, nominative), jala (genitive), jalga (partitive)
- It has 14 productive cases (grammatical and semantic cases).
  - Cases express relations between words and are sometimes used instead of postpositions (jalal and jala peal have the same meaning: on the foot)
- Cases have different alternative case endings.
  - e.g., Valid allative plural forms for jalg (foot) are: jalgadele, jalule, jalgele

our features rely on these properties of the language.
Results - Summary

- We get a classification accuracy of 79%, with a feature set consisting of 78 features.
- We reach almost the same accuracy, with a smaller subset of 27 features.
- There seems to be a lot of correlation between the most predictive features though.
- Comparing classification and regression, we find classification better.
- Morphological features are more prominent between A2,B1 and B2,C1 but not B1,B2.

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