GIREP-EPEC
Transforming physics learning via Research & Practice
LEIDEN, 2025

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Evaluating Scientific Argumentation Skills in Undergraduate Lab Reports at scale using AI

Thursday 3 July 2025 16:10 (20 minutes)

Evaluating the efficacy of teaching scientific argumentation skills in undergraduate courses is an important task for ensuring that we are providing a high-quality scientific education. To this end, we propose an approach that leverages recent advancements in computational methods to automate the extraction of text from undergraduate student lab reports and identify elements of scientific argumentation. We build on existing argumentation frameworks to develop a new coding scheme that encompasses content labels, inter-sentence relations, and physical and logical correctness. With this method, we aim to investigate the possibility of building a fully automated pipeline for evaluating our teaching.

Education level

Age over 18 (excluding teacher education)

Physics topic

Other

Research focus

Evaluation & Assessment

Research method

Mixed method (qualitative & quantitative)

Organizing preference criteria

Education level

Authors: ANDRIUC, Oxana; FOX, Michael

Presenter: ANDRIUC, Oxana

Session Classification: Parallel oral presentations

Track Classification: Laboratory-based physics (LAB)