

## Automatic approaches for hint generation to support human in question answering

<b>Level</b>	Master
<b>Prerequisites</b>	Python
<b>Category</b>	Natural Language Processing, Cognitive/Education Research, Wikipedia data analysis
<b>Supervisor</b>	Adam Jatowt

Hinting does not only raise a chance that the answer to a given question will be found but is also an effective way of teaching since it forces a person to start thinking (often through an interplay of complex processes of association, comparison, abstraction, etc.) in order to come up with a correct answer or at least to narrow down the scope of potential candidates. Therefore, sometimes questions in student exams or homework are complemented with supportive hints. Simply presenting the right answer after a wrong one was given, or in case of no answer, may not have a significant learning effect.

Automatic question answering and generation have been recently studied quite extensively in the field of natural language processing. However, providing hints to help humans successfully answer questions has not been researched yet, despite hints being a common vehicle for humans to infer correct answers.

The tasks of this thesis are threefold:

1. Survey literature (psychology, cognitive studies, education) to determine the desired characteristics of good hints and to build preliminary taxonomy of hint types and strategies.
2. Design and implement an approach that takes question-answer pair and uses Wikipedia/Wikidata API for generating hints to the question that will be formed from predicates that involve the answer (the answer itself will be removed from the hint)
3. Use contextual information to generate a sequence of hints with desired characteristics (e.g., an increasing discriminative power of sequential hints)

The last step will consider the previously given wrong answers by the user (if any), and perhaps any prior hints provider for hinting on this question to this user if there were any. This should form a richer input that can lead to generating more adapted hints.