Assessment of Question Quality Using Bloom’s Taxonomy

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Our Aim

To assess the quality of questions by classifying them according to Bloom’s Taxonomy. We want to build a system that can predict the difficulty level of a question to a reasonable degree of accuracy.

Our Goals

We want our tool to be useful to teachers and students alike. Our tool can be used for:

- automating question paper setting
- analysing the study patterns of students
- a pedagogic tool to gauge content delivery

Our Approach

We’ve built two models: one for knowledge classification and the other for skill classification.

The Knowledge

1. Question
2. Lower case and removal of punctuations
3. Strong Stop word Removal
4. Stemming and lemmatization
5. N squared model

- Chapter Number
- LDA
- LSA
- docs2vec

- Voting Strategy
- 4 x 1 probability distribution

The Skill

1. Question
2. Lower case and removal of punctuations
3. Filtering out words
4. Stemming and lemmatization
5. N squared model gives us the chapter number with high confidence
6. SVM GloVe
7. MaxEnt Model
8. BiRNN

- Voting Strategy
- 6 x 1 probability distribution

Our Results

- Achieved 90% accuracy with The Skill
- Achieved 65% accuracy with The Knowledge
- Can determine question quality with reasonable confidence. This opens the door to a world of opportunities.

We can tell you if a question is tough or easy with our system (harder questions have higher scores. Indeed a procedural question is harder than a factual question).