[ J. D. Karpicke et. al., 2012 ]
[ R. J. Hift. 2014 ]
[ D. Rohrer et. al., 2010 ]
QG-Net: Data-Driven Question Generation Model for Educational Content

Jack Wang
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... one of the positive contributions of deviance is that it *fosters social change*. What is one of the positive contributions of deviance?

✓ Fluent
✓ Relevant
Generates fluent and relevant questions
Adaptive to texts from various subjects
... one of the positive contributions of deviance is that it fosters social change.

What is one of the positive contributions of deviance?
Experiment overview

- QG-Net learns to generate questions using **SQuAD**

Source sentence (from Wikipedia)

Nikola Tesla was a Serbian American inventor, ...

Answer (selected from text)

Serbian American

Generated question

What is Tesla’s nationality?
Experiment overview

- QG-Net learns to generate questions using SQuAD
- We test it on three OpenStax textbooks
  - Pre-processed the textbook texts to the same format as SQuAD
  - Compared to 2 of the best existing models (baseline 1\(^1\), baseline 2\(^2\))

1. M. Heilman, 2010
2. X. Du et. al., 2017
Weber noted that different groups were affected differently based on education, race and gender, and that people's’ reactions to inequality were moderated by class differences and rates of social mobility, ...

**QG-Net**: Along with education and race, what did Weber believe different groups were affected by?

Baseline 1: What was education, race, and,?

Baseline 2: Along with education, race, race, and race, what other groups were affected by the Kinsey scale?
The 1830 **Indian Removal Act** and subsequent displacement of the Creek, Choctaw, Chickasaw, Seminole, and Cherokee tribes of the southeast fulfilled the vision of a white nation and became one of the identifying characteristics of the age of Jackson. **Chapter 10.4**

**QG-Net:** What act became one of the identifying characteristics of the age of Jackson?

Baseline 1: What did and subsequent displacement of the Creek, Choctaw, Chickasaw, Seminole, and Cherokee tribes of the southeast fulfil the vision of a white nation?

Baseline 2: What was the name of the act that caused a white nation to become a white nation?
The 1830 **Indian Removal Act** and subsequent displacement of the Creek, Choctaw, Chickasaw, Seminole, and Cherokee tribes of the southeast fulfilled the vision of a white nation and became one of the identifying characteristics of the age of Jackson.

**QG-Net:** What act became one of the identifying characteristics of the age of Jackson?

Baseline 1: What did and subsequent displacement of the Creek, Choctaw, Chickasaw, Seminole, and Cherokee tribes of the southeast fulfill the vision of a white nation?

Baseline 2: What was the name of the act that caused a white nation to become a white nation?

**QG-Net:**
- Generates fluent and relevant questions
- Is adaptive to text from various subjects
Human evaluation experiment

- We sample 150 sentences from each textbook
- We use the three models to generate questions
- Human evaluators evaluate the quality of generated questions
  - Fluency
  - Relevance
- Human evaluators pick which question(s) could have been generated by human
  - Can choose none of them
Human evaluation results

QG-Net:
✓ Generates superior questions in terms of both fluency and relevance
✓ Works well for inputs from various subjects
Perceptually, QG-Net generates questions of superior quality than those generated by baseline models.
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Questions?

Input text

QG-Net

Generated question

QG-Net is on Github!
https://github.com/moonlightlane/QG-Net
jzwang@rice.edu