Can You Distinguish Truthful from Fake Reviews? User Analysis and Assistance Tool for Fake Review Detection

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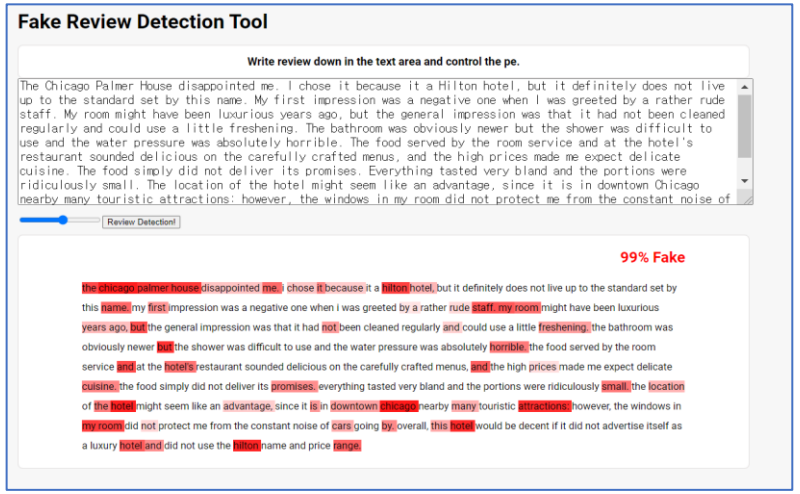
Overview

- Customer review authenticity has become crucial in e-commerce platforms.
- We propose a simple assistance tool, **You Only Need Gold (YONG),** to detect deceptive reviews and augment user discretion.
- We provide an in-depth **user understanding on dealing with fake reviews** under the guidance of YONG.

You Only Need Gold (YONG)

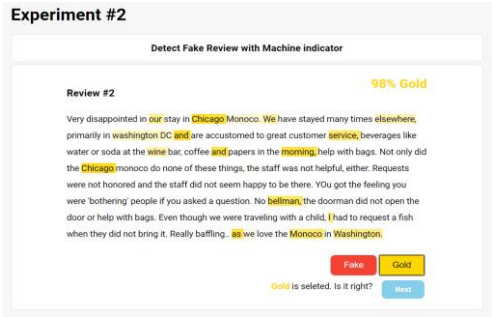


- YONG provides the **gold indicator**, which consists of three intuitive, distinct features:
  - **I. Model decision** (Fake / Gold)
  - **II. Probability (%)**
  - **III. Evidence** (word highlights – the more intense the color highlight, the more important of a role the word plays)
- YONG uses **BERT** as the backbone model, which is finetuned on the OpSpam dataset, with its attention weights visualized as Evidence.
- We leverage YONG to run user evaluations and on human capabilities and tendencies in detecting deceptive reviews.

Research Questions (RQs) / Experiment

I. Can humans **outperform** models in fake review detection?
II. Can YONG **augment** human capability?
III. Which feature in YONG influences human decision the most?

- Separate **experiment for each RQ**
- 24 participants are required to classify fake reviews with & without YONG.
- The test is **single-blind**; participants don't know the ground-truth label



Results

Condition	Score
No tool	0.41
With tool	0.54
Model	0.70

Results of Experiments 1-2

Feature	Decision	Probability	Evidence
Influence	3.69	3.91	1.87

Results of Feature-wise Influence
(1-5 scale)

I. Humans are not good at detecting fake reviews, underperforming the model by a large margin.
II. With YONG, the accuracy increases substantially. **(0.41 ➔ 0.54)**
III. Among three features of YONG, **probability** plays the primary role in convincing users.

Discussion

- Human capability of fake review detection is **unreliable** and requires machine assistance.
- Evidence (interpretable attention visualization) is **hardly explicable**.
- **Interpretability** is different from **explainability**.
- Assistive tools need to provide **faith-gaining features.**