The Effects of Interactive AI Design on User Behavior: An Eye-tracking Study of Fact-checking COVID-19 Claims

Li Shi[1], Nilavra Bhattacharya[1], Anubrata Das[1], Matthew Lease[1], Jacek Gwizdka[1]
[1]School of Information, The University of Texas at Austin

GOOD SYSTEMS
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Introduction

User might **trust** fact-checking models even when they are **wrong.**

Transparent AI systems may prevent over-trusting by revealing the reason of the prediction and calibrating users' trust.

Efficiency and scalability of **automated IR** can be **augmented** with **transparent and explainable AI.**

Previous work proposed an interactive fact-checking AI system increases transparency of the system [1].

Research Goal

Investigate the effects of the interactive AI design on user behavior in human-AI mixed-initiative fact-checking systems

Methods

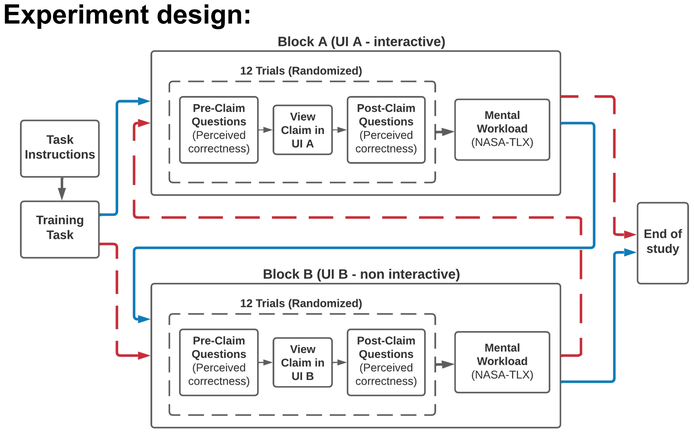
Study: controlled, within subjects (N=40) eye-tracking

Measures: Eye-tracking (ET) measures, interface and news dwell time, and mental workload

Handpicked claims and news-articles about **COVID-19**

Claims with different correctness are distributed equally

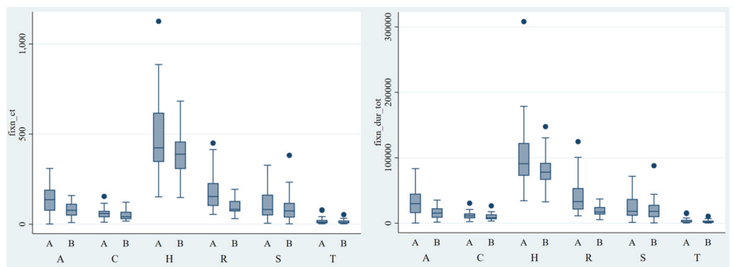
Experiment design:



Figures and Results

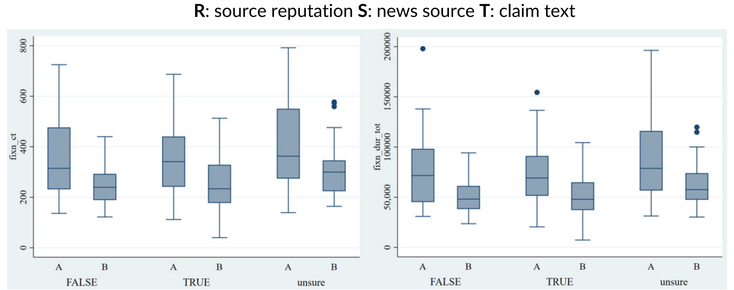
Take-away: The interactivity of the **AI-powered fact-checking system** has an effect on the **dwell time**, **fixation count and duration**, but not mental workload.

Interactive fact-checking system showing AOIs



Total fixation count **total fixation duration**

AOIs in two interfaces: **A**=interactive **B** = non-interactive
A: article stance **C**: predicted correctness **H**: article headline
R: source reputation **S**: news source **T**: claim text



Total fixation count **total fixation duration**

for different claim conditions

Conclusion

Results

Dwell time on news: interactive > non-interactive UI

Total fixation counts/duration: interactive > non-interactive UI

Significant interaction between the interactivity and AOIs on **total fixation count/duration**

Significant main effect of claim correctness on **total fixation count/duration**

Mental workload is not significantly different between UIs

Discussion

The system interactivity plays a positive role in a mixed-initiative AI-powered system

Users **didn't rely on the system unilaterally**, but read the original news to help them make informed decisions

Users engage more and spent more time reading the news in **interactive interface**

Users pay more attention to the **news headlines** and the **UNSURE claims**

Interactivity encourages users to spend more time evaluating the claim correctness while **not imposing higher mental workload**

Future Work

Claims on **different topics** and in **different contexts**

Explore the effect of **time** constraints and **accuracy** incentivizing

Observing **prolonged user interaction** with the tool

Acknowledgments

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References

[1] Nguyen, A.T., Kharosekar, A., Krishnan, S., Krishnan, S., Tate, E., Wallace, B.C. and Lease, M. 2018. Believe it or not: Designing a Human-AI Partnership for Mixed-Initiative Fact-Checking. Proceedings of the 31st Annual ACM Symposium on User Interface Software and Technology (Berlin Germany, Oct. 2018), 189–199.

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