Knowledge graph-based participatory exploration interface for critical acceptance of AI-generated news images

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1. Motivation & Background

AI image generation has become easily accessible.

As newsrooms increasingly adopt AI-generated images, the risk of misleading audiences through misinformation and framing has grown.

Critical acceptance of AI news images is becoming increasingly important.

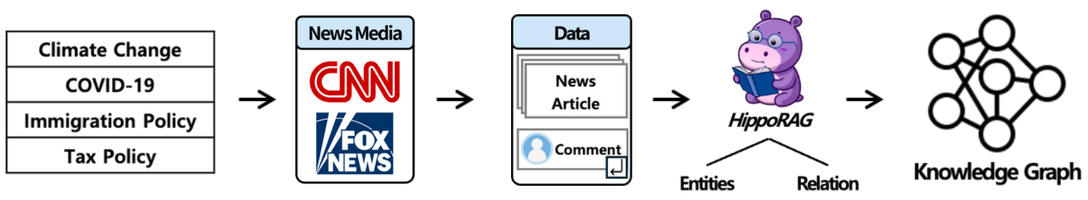
Existing countermeasures focus only on technical identification and provide static information.

Because AI images shift with context, static cues are insufficient for strengthening critical awareness.

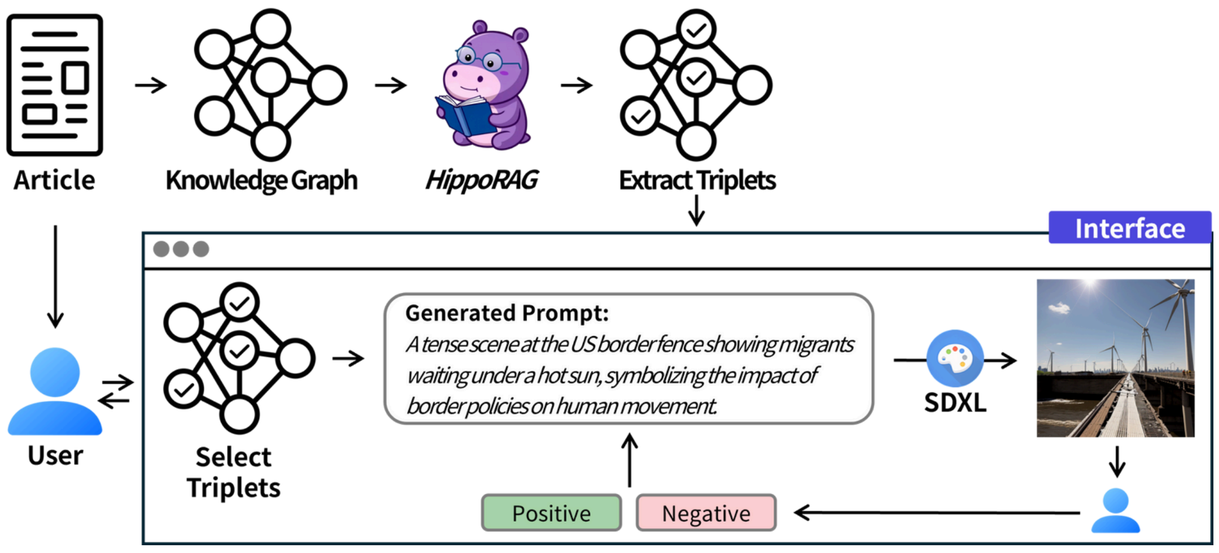
We proposed a user-driven, news-based AI image generation interface to strengthen critical acceptance of AI-generated news images.

2. Research Procedure

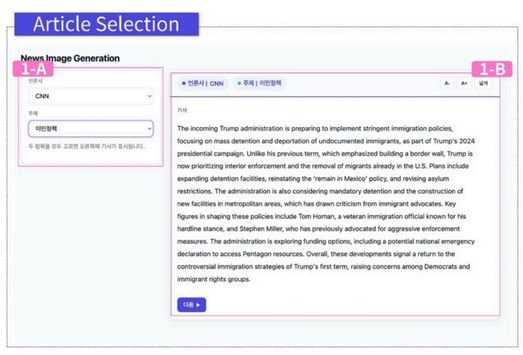
Data collection & Knowledge Graph Construct

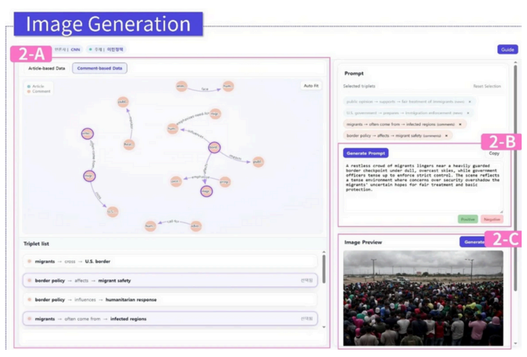


Web System Stucture



Interface

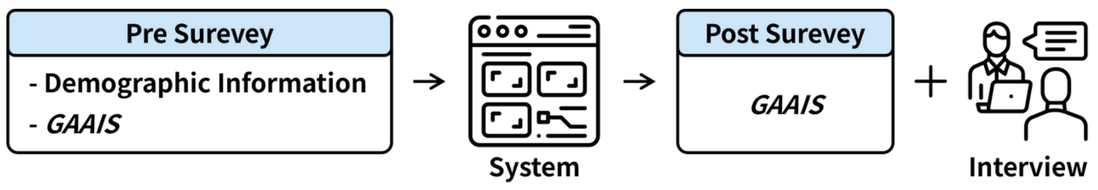




Key Functionalities in Interface

- User selects media outlet & issue → relevant articles display
- Knowledge-graph-based triplet exploration & selection **2-A**
- LLM-based automatic prompt construction from selected triplets **2-B**
- Positive/Negative framing control that modifies the generated prompt **2-B**
- SDXL-based image generation enabling real-time observation of visual shifts **2-C**

3. User Study



GAAIS (Schepman & Rodway, 2023): The General Attitudes towards Artificial Intelligence Scale

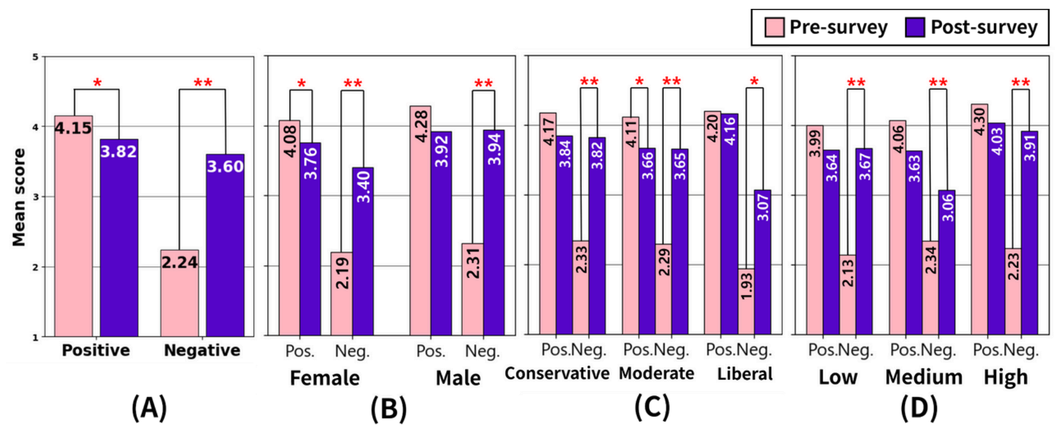
Demographic information of participants

(N = 48)

Demographic Information		N	%
Gender	Female	18	37.5
	Male	30	62.5
Political Ideology	Conservative	17	35.42
	Moderate	22	45.83
	Liberal	9	18.75
Perceived AI Knowlege	Low	12	25.00
	Medium	14	29.17
	High	22	45.83

4. Result

Qualitative Result



- (A) Overall Attitude Change
  Positive ↓ (4.15 → 3.82), Negative ↑ (2.24 → 3.60)
- (B) Gender
  Both genders increased negative attitudes
- (C) Perceived AI Knowledge
  High & low knowledge groups showed strongest increase in negative attitudes
- (D) Political Ideology
  Largest change in centrists; all groups increased negative perception

Interview Finding

- “A slight change in prompt produced a totally different image —this was surprising.” (P1)
- “I realized how easily political framing can be manipulated.” (P2)
- “Now I will double-check AI images in news articles.” (P3)

5. Future Work

- Expand the dataset to include more diverse news topics and sources to broaden framing patterns.
- Improve image generation quality to provide more realistic visual outputs for framing comparison.
- Conduct larger-scale user studies with more diverse demographics to validate generalizability.
- Evaluate long-term user impact on media literacy and critical image consumption.