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Overview

Context

- Computational models for argumentation assist students in developing their critical thinking skills.
- These models provide different explanations, which differ in terms of effective feedback.

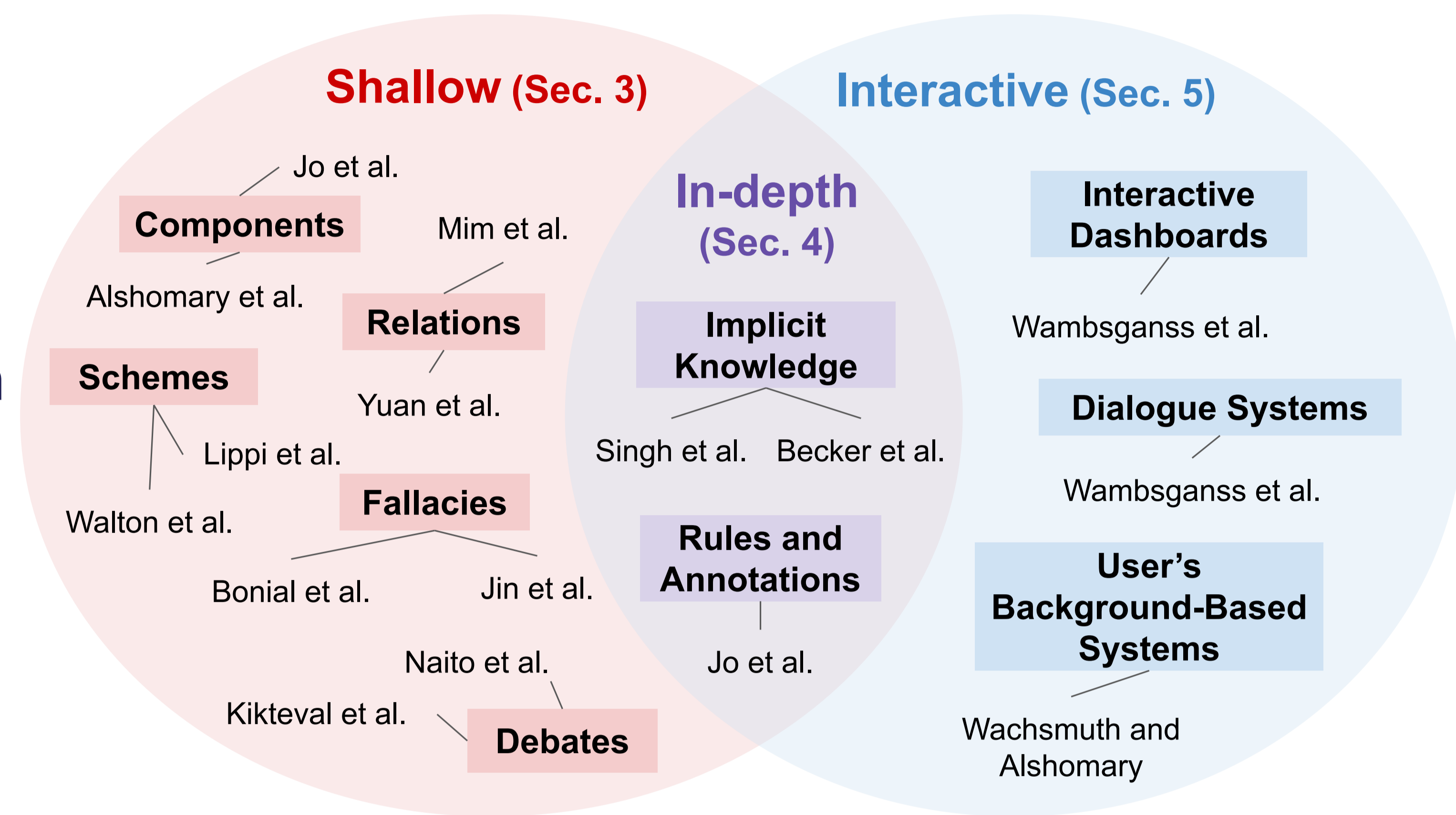
Challenge

- How to explain the output of current argumentation models in a way to improve users' critical thinking skills efficiently?

Contribution

- **Survey:** 24 works arranged in 3 types of explanations: Shallow, In-Depth, and Interactive.

Survey Works



Types of Explanations

Shallow = What

Your argument has an invalid generalization

Richness ★☆☆☆☆

Understandability ★☆☆☆☆



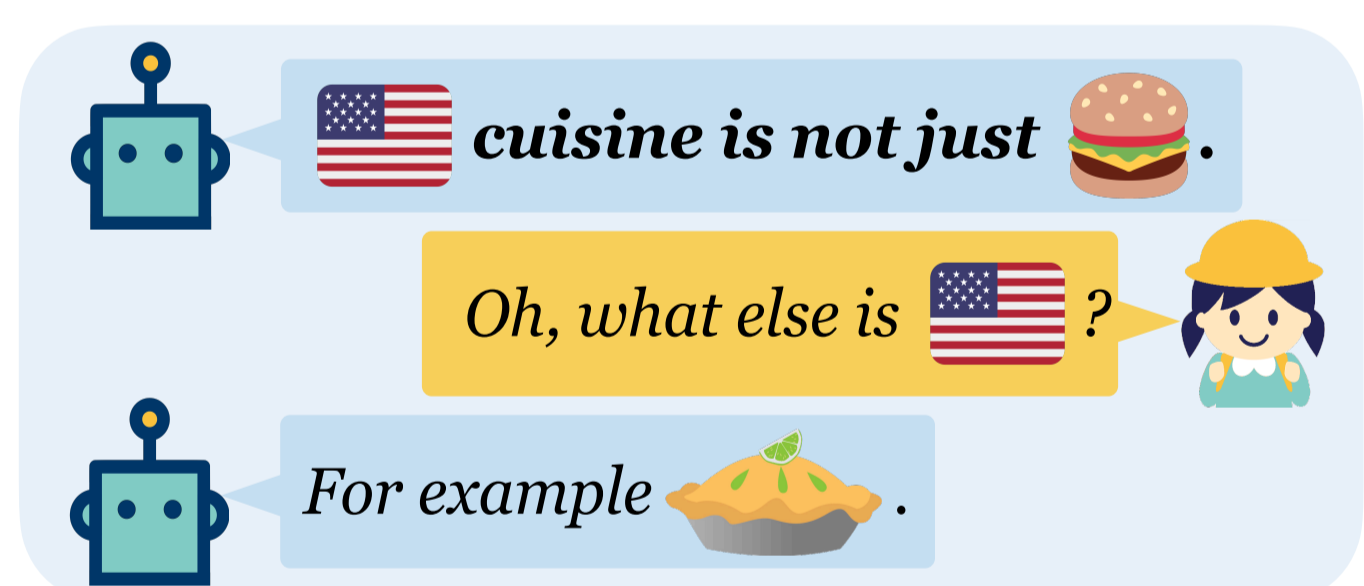
🇺🇸 cuisine is not healthy.
Indeed 🍔 are not healthy.

In-Depth = Why

Your argument has an invalid generalization: 🇺🇸 cuisine is not just 🍔.

Richness ★★★★★

Understandability ★★☆☆☆



Interactive = How

Richness ★★★★★

Understandability ★★★★★

- Legend:
- 🇺🇸 = American
 - 🍔 = Hamburger
 - 🥧 = Lime Pie
 - 👦 = Child
 - 🤖 = Model

Open Issues

1 How to give the **best feedback** to improve critical thinking skills?

2 How to **visualize** the feedback to maximize the user's understanding?

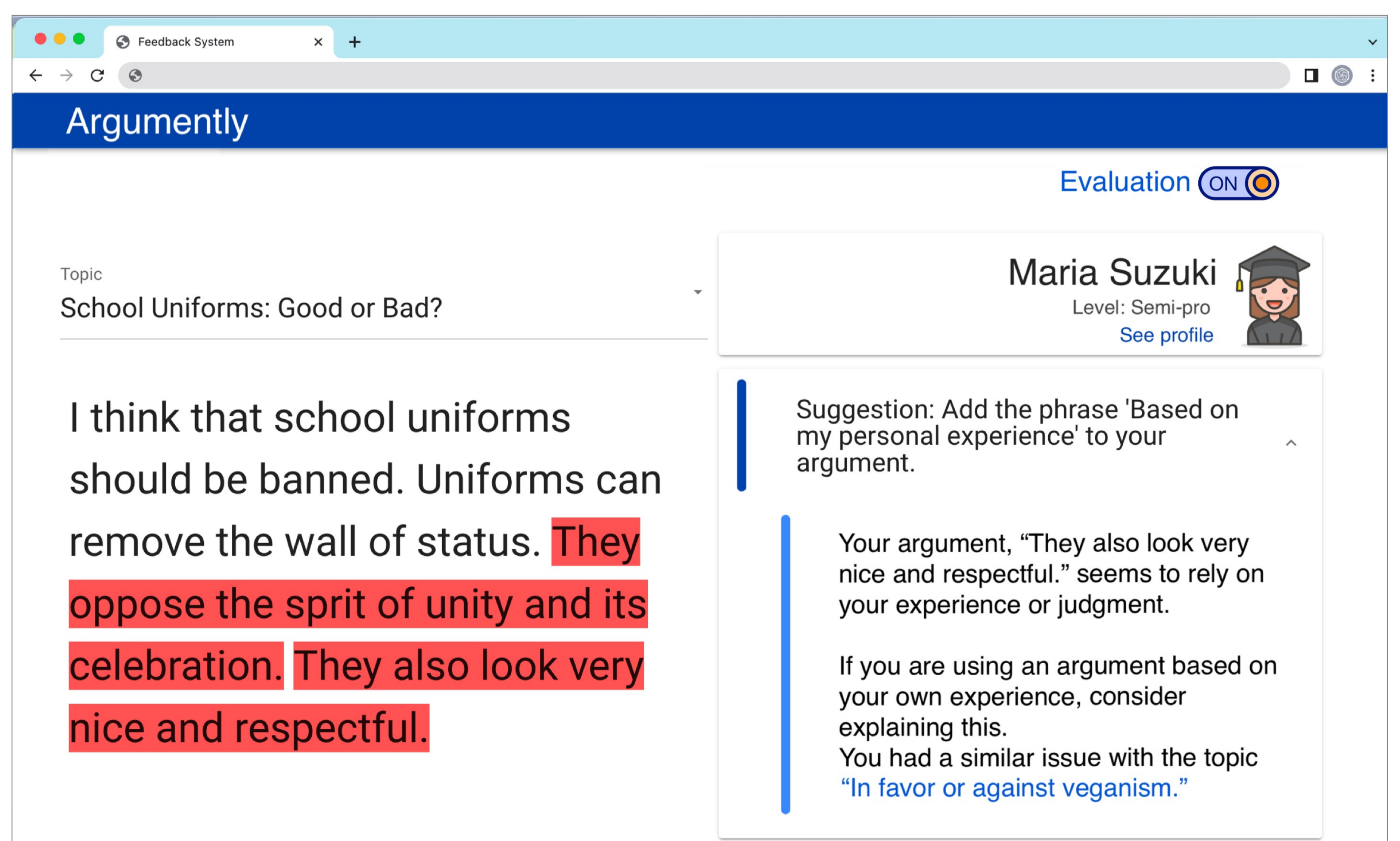
3 How to fully **personalize** the explanations?



- 1 Feedback
- + 2 Visualization
- + 3 Personalization
- = Critical thinking improvement

Future Work

- **Survey + categorize** computational argumentation models **based on new dimensions**
 - Visualization,
 - When to trigger the explanations,
 - How to trigger the explanations,
 - etc.
- Based on our findings:
 - **Create an interface** for maximizing user's understanding of errors to improve their critical thinking skills.



All the papers mentioned in the survey can be found here:

