Argument Mining to Analyze Reasons for online [Dis]Trust in Sustainable Initiatives

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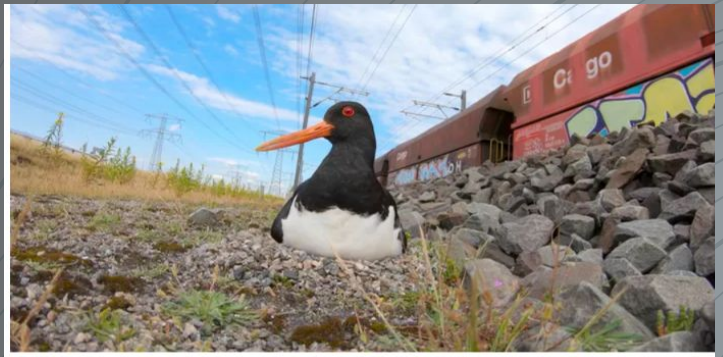
Who?

- **Myrthe Reuver**, PhD candidate Computational Linguistics
  Supervisors: Antske Fokkens (CLTL @ VU), Suzan Verberne (Leiden).
  → Topic: (Viewpoint) diversity in news recommendation.

- **Ana Isabel Lopes,** Assistant Prof Communication Science
  → Topic: how online dialogues between people and organizations influence individual and organizational behaviour

- **Alessandra Polimeno,** student assistant
  ReMA student Computational Linguistics

[Dis]trust & sustainability initiatives



▲ Scène uit de natuurfilm Wild Port of Europe. © Wild Port of Europe

Felle kritiek op Nederlandse natuurproductie, bioscoopfilm zou aan 'greenwashing' doen

De nieuwe Nederlandse natuurfilm *Wild Port of Europe*, een ode aan de flora en fauna in het havengebied van Rotterdam en Moerdijk, zorgt voor veel woede onder milieuorganisaties. Onder meer Greenpeace, Extinction Rebellion en De Jonge Klimaatbeweging vinden dat de film, die vanaf donderdag in zeker 90 bioscopen door het hele land gaat draaien, doet aan 'greenwashing'. De makers bijten van zich af.

NEWS

Shell accused of 'greenwashing its harmful activities' following partnership with British Cycling

Tuesday, October 11th 2022, 8:20 AM EDT
Updated: Tuesday, October 11th 2022, 9:50 AM EDT

Hugh R Hastings/Getty Images

What drives (a lack of) trust in the adoption of sustainable initiatives expressed in online discussions?

Value-belief-norm theory (Stern et al., 1999).

People who provide support believe:

- valued objects are **threatened**
  → (threat/no threat dimension)
- their actions can help **restore** those values
  → (power/ no power dimension)

image: Free SVG, CC licence

Trust in Sustainable Initiatives

image: Free SVG, CC licence

Valued object: environment

Initiative: consumption of locally produced food

Distrusting people may not believe;

- non-local food production affects the environment (**no threat**)
- changing food habits has a collective effect (**no power to restore**)

Measuring Trust Online

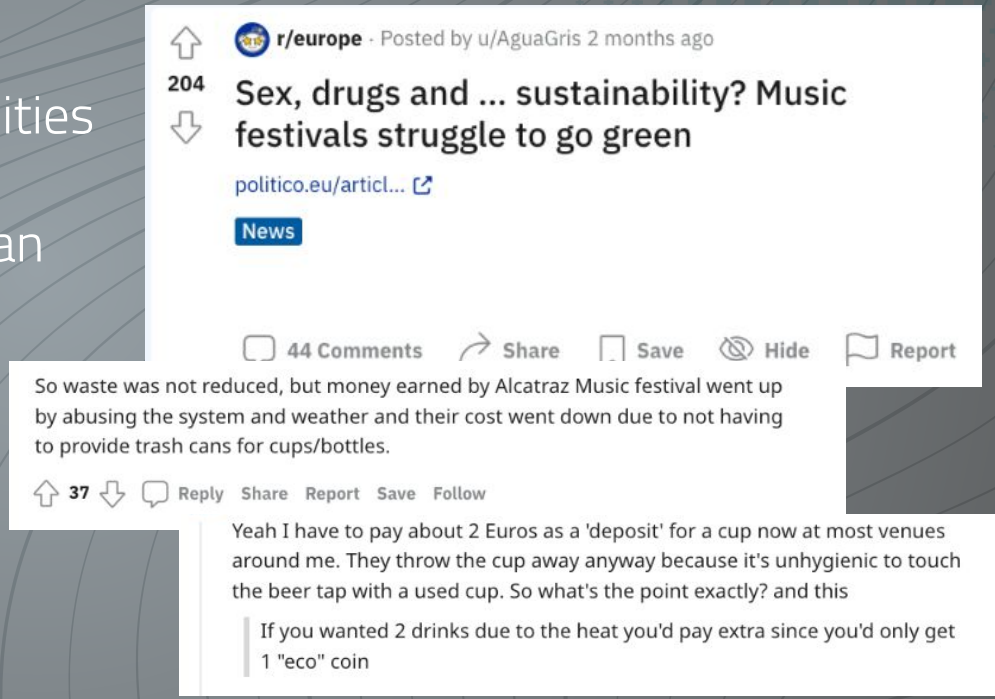
- Trust/distrust and threat/power → **different types of arguments** for or against an initiative (*stance*)
- Operationalization: **argument mining** (Reimers et. al., 2019; Lawrence & Reed, 2020; Reuver et. al., 2021).
- Current state of the art for detecting arguments & different types: **Large Language Models (LLMs)** such as BERT (Devlin et. al, 2019) and RoBERTa (Liu et. al., 2019).

Where? Reddit!

- Reddit: online discussions
  - “subreddits”: context + communities (Proferes et. al., 2021)
  - **r/europe** for specifically European initiatives

Why Reddit?

- longer arguments,
- more context (subreddits)
- “voting” on arguments,
- topic-specific.



Our first steps

Phase 1:

- Scraping Reddit Europe discussions (still open to maybe compare to other sub-communities);
- (Partly) annotating data on trust/distrust and power/no power dimensions → *dataset!* 🎉

Our future steps

Phase 2:

- Evaluate both **supervised** and **unsupervised** LLM argument mining models on distinguishing trust/distrust and power/no power arguments;
- Use this model to **automatically measure** the dimensions in these discussions

Our [Alessandra's] work so far

1) Defining **keywords** on sustainability in Reddit (also find nearest neighbours to these words in Google News embeddings)
2) Scrape discussions mentioning these keywords on subreddits: "europe", "europeanunion", "europes";
3) First output:
   - 2.261 posts (discussions on initiatives)
   - 38.665 comments in these discussions
   - timespan of 5 years (2016-2021)

"Most people understand that it is controversial to use food-crops, such as corn, as biofuels while there are hundreds of millions starving. But in my view, even using ""organic waste"" as biofuels is problematic."

"It starts and ends at the consumer. Relying on a broad policy to stop plastics or force people to buy things not made in developing countries won't work. We need to be responsible consumers."

Future steps

- pre-processing (bots, empty discussions)
- Start annotation on the trust/distrust and power/no power dimension

Phase 2:

- both **supervised** and **unsupervised** LLM argument mining models on distinguishing trust/distrust and power/no power arguments