Bachelor’s thesis defense:
Integrating counterarguments into args.me

Philipp Rudloff  June 11th, 2019

1. referee:  Prof. Dr. Benno Stein
2. referee:  Jun.-Prof. Dr. Florian Echtler
What is args?

- An argument search framework for studying questions revolving around computational argumentation
- A prototypical argument search engine
- Presented 2017 in “Building an Argument Search Engine for the Web”

What is an argument?

- A claim and a set of premises which either support or attack the claim

I like the flat, but it’s too small; therefore, it’s not suitable for me.

- attacking premise
- supporting premise
- claim
What is a counterargument?

- An argument countering another argument:
  - it either denies the other argument’s claim
  - or it attacks the relationship between the other argument’s claim and its supporting premises

Ice is slippery because pressure lowers the ice’s melting point so it becomes water.

- **claim**
- **supporting premise**
Goals

● Integrate counterarguments into the args framework and search engine based on “Retrieval of the Best Counterargument without Prior Topic Knowledge”


● Improve args.me’s layout

● Perform a user study on the new prototype(s) for args.me
Web service prerequisites

Looking into the development process of a Webis service
Web service prerequisites

● High fluctuation of participants working on software in the Webis group

● Results:
  ○ Wide variety of used tools and programming languages
  ○ Increased difficulty in project maintenance
  ○ Higher barrier of entry for new researchers and developers

● Reaction: Standardize the development process
Project structure

- A Webis service is concerned with many things
- Various services share similarities in structure
- Separate concerns by splitting the service into well-defined components

Expectations:

- Reduce risk of breaking unrelated aspects of a service when changing another
- Less interference when working multiple teams work on the same service
- Potential for re-using common components
Project structure

Model

HTTP API

Application

Server

Webis service
Project structure
Technologies

- Greatest common denominator approach
- Improve maintainability and learnability by using fundamental technologies
- Code produced for this thesis uses standard HTML, CSS, and JavaScript
Use cases & features
Use cases

- Give reason for new features
- Are there scenarios with requirements that exceed args’ current capabilities?
Use case scenarios

- Look at argumentation from the perspective of different categories: Researching, convincing, opinion-forming, decision-making

- Example scenario: Convincing
  - In order to convince someone of a different opinion, presenting counterarguments seems essential
Example scenario: Convincing

Argument:

Gravity doesn’t affect light because gravity is based on mass and light has no mass.

Counterargument:

Gravity affects light because gravity is based on energy and momentum which light has.
Features

- **Argument search**
  - The core of an argument search engine
  - Exploration of a shallow argument space

- **Argument-counterargument relation**
  - A useful addition to tasks revolving around argumentation
  - Exploration of the argument space in a more meaningful way
Searching in args’ argument space

Index:

- **argument**
  - ID
  - premises
  - conclusion
  - ...
  - match

- **argument**
  - ID
  - premises
  - conclusion
  - ...
  - no match

- **argument**
  - ID
  - premises
  - conclusion
  - ...
  - match

- **argument**
  - ID
  - premises
  - conclusion
  - ...
  - match

- **argument**
  - ID
  - premises
  - conclusion
  - ...
  - ...

Query
Exploring argument-counterargument relations

Counterarguments:

- argument
  - ID
  - premises
  - conclusion
  - ... counterarguments

- argument
  - ID
  - premises
  - conclusion
  - ... counterarguments

- argument
  - ID
  - premises
  - conclusion
  - ... counterarguments
Searching in args’ argument space

Index:

Argument

Argument

Argument

Argument

... 

Counterarguments:

Argument

Argument

Argument

... 

Counterarguments:

Argument

Argument
Prototypes
Prototypes

- The initial state of args.me and apparent issues with its usability were documented.
- In total, five prototypes were developed with these goals:
  - Implement the previously defined new features
  - Solve the documented layout and accessibility issues
The initial state of args.me

- Args.me allows its users to search for arguments by entering a free-text query
- The argument search results are displayed in a pro vs. con view: A two-column view with two lists of arguments according to their stance
- Additionally, the results can be viewed in a topic space visualization

Layout issues

- The argument search results page does not have a responsive layout.
- On small to medium-sized screens, content overflows the viewport on both axis.
Bachelor's thesis defense: Integrating counterarguments into args.me
Accessibility issues

- Args.me has a generally poor keyboard and screen reader accessibility on its argument search results pages.
- In particular, the full content of an argument cannot be accessed by either keyboard or screen reader users.
Accessibility issues

- Args.me has a generally poor keyboard and screen reader accessibility on its argument search results pages
- In particular, the full content of an argument cannot be accessed by either keyboard or screen reader users

Feminism Has NO gender. I am a Man And I am A...
http://www.debate.org/debates/Feminism/1/
Feminism Has NO gender. I am a Man And I am A Feminist. Feminism by definition stands up for all my perspectives, ambitions, desires and behaviours. Feminism is the ACT of ... ▼ score
Accessibility issues

- Args.me has a generally poor keyboard and screen reader accessibility on its argument search results pages.
- In particular, the full content of an argument cannot be accessed by either keyboard or screen reader users.

Feminism Has NO gender. I am a Man And I am A...
http://www.debate.org/debates/Feminism./1/
Feminism Has NO gender. I am a Man And I am A Feminist. Feminism by definition stands up for all my perspectives, ambitions, desires and behaviours. Feminism is the ACT of score

Not keyboard-accessible, does not communicate interactivity
Prototype 1

- One-column layout as the new default view for argument search results
- Counterargument previews were added to the first result
Prototype 2

- Counterargument previews were added to all results
- Previews are now initially hidden
Prototype 3

- Re-ordered elements to emphasize their importance
- Removed argument title
Comparison: Arguments in prototypes 2 & 3

Feminism Has NO gender. I am a Man And I am A...

**pro** - Source: debate.org/debates/Feminism/1 - **score**

Feminism Has NO gender. I am a Man And I am A Feminist. Feminism by definition stands up for all my perspectives, ambitions, desires and behaviours. Feminism is the ACT of ...

Show counterarguments
Comparison: Arguments in prototype 2 & 3

Feminism Has NO gender. I am a Man And I am A...

Pro: Source: debate.org/debates/Feminism/1 - Score

Feminism Has NO gender. I am a Man And I am A Feminist. Feminism by definition stands up for all my perspectives, ambitions, desires and behaviours. Feminism is the ACT of ...

Show more

Show counterarguments

Stance: Pro  Supported conclusion: Feminism.

Show all

Feminism Has NO gender. I am a Man And I am A Feminist. Feminism by definition stands up for all my perspectives, ambitions, desires and behaviours. Feminism is the ACT of ...

Source: debate.org/debates/Feminism/1 - Score

Show counterarguments
Prototype 4

- A drop-down menu for switching between views was added
- Updated the detail pages for counterarguments so that they visually match arguments in the search results
Prototype 5

- Incorporated expert feedback regarding the overall use of space and the order of elements.
Prototype 5: Demo
Achieved goals

- Integrated counterarguments into args.me
- Made args.me’s layout responsive
- Reviewed some aspects of args.me with the Web Content Accessibility Guidelines 2.1 ([w3.org/TR/WCAG21](w3.org/TR/WCAG21))
- Proposed a foundation for streamlining the development process within the Webis group
Future work

● Improve counterarguments integration
  ○ Allow access to full counterarguments directly on an argument search results page

● Explore integration of related claims
  ○ When entering a query, args matches its with claim on the index
  ○ Args could then present related conclusions
Thank you for your time
Related work

2017


2018


Bachelor’s thesis defense: Integrating counterarguments into args.me