Debatt - The Social Argument Map

Ilya Ashikhmin[1]

Abstract.

Debatt is a web application for constructing argument maps. It supports several types of argumentation, from simple support/attack relations to inductive/deductive reasoning, and will support more in the future. Furthermore, it will have advanced functionality for sharing maps, debating over arguments, reusing/importing arguments constructed by different people, representing mindset as a collection of statements already supported by arguments and counterarguments. Debatt is in prototyping phase now.

1 INTRODUCTION

The idea to create a tool to help people debating in the Internet was inspired by reading long discussions in social networks like `https://www.livejournal.com/`. While there are some masterpieces of civilized disputes, in many cases the opponents degrade the quality of their arguments in the course of the discussion. They surrender to the numerous fallacies, e.g. straw man argument, *argumentum ad hominem*, false dichotomy, etc. Sometimes good arguments are scattered across multiple articles and discussions. One's position might look weak because they didn't come up with the suitable arguments at the right moment and another person, who has good argument, joined the discussion too late. Debates in social networks can become very heated. They lack structure. Facebook does not support multi-branching. Thus when there are several argument paths things get messy. LiveJournal supports branches but good (counter)arguments are lost in a huge pile of meaningless or off-topic comments. It is hard to distinguish valid arguments from invalid. Voting does not guarantee correct answers at all because the majority is wrong quite often.

The purpose of this project is to develop a web application (Debatt) that will make it possible to create a networks of statements and arguments, that will facilitate discussion to as high levels of Graham's Hierarchy of Disagreement as possible, i.e. avoiding name-calling and referring to authority. Debatt can become a social network with communities of people sharing common mindsets as well as a platform for heated debates.

There are some existing tools for creating argument maps, e.g. Quaestio-it[4], `http://www.argunet.org` and `https://www.rationaleonline.com`. Some have only very basic types of relations: supports and attacks. Others more sophisticated but lack user-friendliness. The Debatt does not impose any specific way of reasoning but gives a flexibility to choose from the simplest support/attack types of argument to the first-order logic.

Debatt is being developed to have these features:

- Collaboratively add new arguments.
- Voting: users can express their opinion about statements and arguments: agree, disagree, the argument is (in)valid, mostly true, etc.
- A collection of predefined reasoning types starting from the very simple supports/attacks across analogies, Occam's razor, counter-arguments, to sophisticated first-order and modal logics.
- A network of trusted experts. You can see what your friendstrusted expertsopponents think, what is most popular counterargument is.
- A library of statements you consider true. You can create them yourself or import from somebody who you trust or whose mindset you share. So when you refer to some statement it comes with supporting arguments already approved by you.
- Statements with supporting arguments will be accessible via HTTP links which you can refer to from discussions in social networks to support your point of view instead of repeating you arguments and answering the same counterarguments over and over again.

2 ARGUMENT STRUCTURE

The paper [6] surveys several approaches to arguments mapping. Each of them has advantages and disadvantages. Some are too academic for broader acceptance. In Debatt we try to make things simple while having an option of advanced reasoning. It is up to the user to decide which level of formalism is acceptable.

2.1 Argument types

There are different types of arguments: simple support/attack argument, deductive/abductive/inductive reasoning, common sense reasoning, etc. People use different heuristics to evaluate the statements: Occam's razor, Hanlon's razor, Hitchens's razor, analogies, etc. They require different treatments and have different inference powers. Some arguments connect one premise to conclusion, other combine several premises. Some compare strengths of other arguments, e.g. Occam's razor.

The Debatt supports both converging and linked arguments. Some types of arguments assume specific structure of the connected statements. E.g.*modus ponens* assume that one statement is an implication with the left side being equal to another statement.

2.2 Statements-argument-statement

Toulmin[7] introduces the concept of warrant, which acts as an addition to statement-to-statement inference. In addition there is the qualifier which assigns the degree to the inferential link. In Debatt we have similar concept by making an argument as a node. So the argumentation graph has vertices with both statements and arguments. Usually the argument or reason is just an edge connecting vertices

[1] NTNU, Norway, email: ilya.ashikhmin@ntnu.no

which are statements. We make arguments as vertices since they might have more complex structure then just connecting two statements: connect more than two statements, connected statements can have different roles, an argument can have extensive description and slots.

2.3 Refutation and fallacies

Some arguments attack statements. Sometimes the premise is correct but the conclusion does not follow from the premise. This means that the reasoning from the premise to the conclusion is wrong. The Debatt will allow attacking this reasoning. Pollock[5] names such attack as undercutting defeater.

2.4 Visualization

The Debatt utilizes light-weight design with block structure. The statements and arguments are composed as nested blocks instead of nodes and arrows graph or tree structure. Similar approach was explored in [2].

2.5 Tree structure limitations

While structuring argument as a tree simplifies comprehension and usability this presents limitations on expressiveness and coverage of some types of reasoning and fallacies. For instance, circle argumentation (*petitio principii*) posses some challenge to be represented in the tree structure, *Occam's razor* refers to two or more arguments on the same level in respect to the statement they support. A contradiction might connect statements on the same level. It looks reasonable to represent such reasoning via graph rather then restrict the map to the tree structure. But the tree structure with collapsible nodes is more natural for internet browsing. In cases where the cyclic connection is required Debatt creates a reference.

3 SOCIAL DEBATING

One can create argumentation maps with Debatt for personal use. But the main value arises from social interactions.

3.1 Assessing a statement

The users will be able to vote for statements and arguments they agree or disagree with. So if a statement have large amount of arguments, the most popular supporting and attacking statements will be shown first. Both supporting and attacking arguments will have their own ranking, so even if the majority is in favor to one group of arguments, most popular (and hopefully strong) arguments from another party will be shown on top also.

A person might not have much trust in plain votes. There are experts in many knowledge fields. It is quite reasonable to rely on their opinion in that fields even if their opinion is opposite to the majority. So the Debatt will give an opportunity to see the votes of the experts they trust.

Different types of arguments have different intrinsic truth-preserving properties, e.g. in *modus ponens* inference the conclusion strictly inherits the truth-value of its premises. But for the simple support relation it is hard to derive the truth/confidence of the conclusion from the premises. Debatt applies conservative approach to propagating truth values: if there is a strict logical connection then it might do some simple inferences, otherwise it leaves the participant a freedom to evaluate the argument themselves. We can use something like Value Based Argumentation Frameworks [1] to evaluate the argument acceptance. The differences in value preferences between parties may lead to different conclusions. But the Debatt will always allow a visitor to evaluate the arguments themselves. The Debatt will facilitate different argument evaluation techniques but will not enforce them. Some statements are objectively true/false, some are subjective in their nature and depend on intrinsic values[3]. While the application will count votes for and against statement the idea is to leave a curious person a possibility to investigate arguments themselves and get their own opinion.

3.2 Reusing arguments

Each map can become a part of another map. So if a person introduces a statement which in turn requires an extensive argumentation itself they can refer to the argument map which supports that statement. For instance, if in some discussion a person uses an statement that a drug should pass double blind clinical trial to enter the market, they can refer to the argument map which support this statement instead of repeating/creating all arguments. And that map might be created by somebody else.

4 APPLICATIONS

The Debatt is intended primary for the debates in the Internet. That may be political, scientific, conspiracy, health related debates. We will try to make Debatt as user friendly as possible. Bloggers will be able to illustrate their opinion in a structured way. Also we plan to add some specific argumentation types to support legal discourse.

In education argument maps help students to build critical thinking skills [8].

5 CONCLUSION

The Debatt is yet another tool for collaborative argument mapping. It is intended to facilitate structured debates via a wide range of possible augmentations and objections. The tool itself does not infer anything by itself but helps participants following civilized discussion.

Debatt is in the early prototype phase.

REFERENCES

[1] Trevor J. M. Bench-Capon, 'Value based argumentation frameworks', *CoRR*, **cs.AI/0207059**, (2002).

[2] Gregor Betz, Michael Hamann, Tamara Mchedlidze, and Sophie von Schmettow, 'Applying argumentation to structure and visualize multi-dimensional opinion spaces', *Argument & Computation*, **10**(1), 23–40, (2019).

[3] Ch. Perelman and Harold J. Berman, *Justice, Law, and Argument*, Springer, Dordrecht, 1980.

[4] Valentinos Evripidou and Francesca Toni, 'Quaestio-it.com: a social intelligent debating platform', *Journal of Decision Systems*, **23**(3), 333–349, (2014).

[5] John L Pollock, 'Defeasible reasoning with variable degrees of justification', *Artificial intelligence*, **133**(1-2), 233–282, (2001).

[6] Chris Reed, Douglas Walton, and Fabrizio Macagno, 'Argument diagramming in logic, law and artificial intelligence', *The Knowledge Engineering Review*, **22**(1), 87–109, (2007).

[7] Stephen Toulmin, *The uses of argument*, Cambridge University Press, Cambridge, updated ed. edn., 2003.

[8] Tim van Gelder, 'Using argument mapping to improve critical thinking skills', in *The Palgrave handbook of critical thinking in higher education*, 183–192, Springer, (2015).