

Architecture for checking fact checkers

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1 Motivation

Isn't it just horrible¹? So many facts, so much news, so much fake news, so much fact checking? So much chaos!

Indeed: With the advent of the World Wide Web, everybody could start their own news agency and publish what they considered the ultimately true and correct perspective on this world². Further technological development allowed everybody to run their own TV-station³. Subsequent changes of our communicative behavior ultimately produced social media giants enabling a small number of privately held companies to modify and influence, to filter, rank and fact-check your search results, advertisements, recommendations, comments, tweets and timelines – and monetize these services to those who can afford it. The general public is the willing victim and paying consumer⁴.

Of course: Controlling the mind of other people seems to be a thrilling adventure! Depending on where you, yourself and your mind, are situated on this every growing spiral of communicative governance and violence, you will have your own interpretation of what is going on. With a bit of tongue-in-cheek, this produces debates such as the following:

¹Note to my students: I intentionally write this section in a motivating, lively tone. Please do not take this as a good example for scientific writing. Scientific writing style is different – and for good reason. Also, a start with an abbreviated, colloquial language such as this sentence is considered good for motivational texts but bad for scientific texts.

²Think blogs, citizen journalism, Wikipedia, Wikinews and more

³No. **Don't** think YouTube or Facebook video now – think <https://joinpeertube.org/> and similar architectures of direct, unsupervised interpersonal video communication.

⁴The well-known US scholar NOAM CHOMSKY is taking the perspective that news agencies do not deliver information but are instruments for manufacturing social consensus. It is then a matter of personal taste, interpretation and ideology if you understand consensus as a necessary element for a society to function or as a mechanism of power to disenfranchise the individual. The observation is not new. The Internet with its diminished costs and advanced methods for manufacturing consensus merely exposes this more clearly. Between the diverse extremes, there exist the famous “*50 shades of grey*”, i.e. all kinds of different nuances, which depend on your own ideological and political standing and seem difficult to objectify.

I read that on the Internet at XYZ.⁵

XYZ has alternative facts and fake news. You must check UVW!

How dare you! UVW! Just liars, deniers and idiots. Check out QRS!

With many hot political topics the debate has reached a stage where rational arguments no longer count. Emotions and strong feelings such as fear, guilt, personal concernment and a feeling of entitlement takes over. This is the time of “alternative facts” and “fake news”, which produce these emotions. We all observed the rise of hate speech. Ridiculing the opponent has become a public sport and often the emotional side of a debate dominates over its rational side.⁶

As a result some are convinced that fact checking is needed, that fake news has to be banned and that the boundary between critical remarks and hate speech has to be redefined. Now the old paradox arises: “Who guards the guardians?”⁷. In our times, the answer seems clear: The open competition of opinions is the best way to improve our view of the world. We have observed: Competition may turn unfair, if it is dominated by a monopolist. *Fact* checkers turn into *fake* checkers when conflicts of interests arise; they are themselves susceptible to manipulation and propaganda, they can make errors and their errors can have wide-spread consequences. When they ultimately turn in to the “Ministry of Truth”, as described by GEORGE ORWELL in his famous book 1984, the next level of the spiral has been reached.

Conclusion: We have to check fact checkers in order to ensure that they are not fake checkers. We need an architecture for checking fact checkers⁸.

⁵In earlier generations, this was, depending on the particular time in history: “I read that in the newspaper”. “I heard that in school and university”. “I heard that on the radio”. “I heard that on TV” — none of which constitute a rational argument but rather indicate one’s willingness to outsource own thinking to social institutions; which may be good or bad, depending on the situation.

⁶This paragraph should not indicate that this is good or bad. Humans are emotional beings and together with ratio, empathy may be considered a core human constituent. The paragraph is intended as an observation only.

⁷Juvenal, Satire 6, 346-348. The document, written as early as the 1st century, did not yet have DoI or ISBN or ISSN or URL.

⁸Again this step may prove just the next step in the spiral. With wide-spread checking of fact checkers comes the risk that not the “best” argument wins but the emotionally most appealing one makes the race. Here GEORGE ORWELL’s Animal Farm and ALDOUS HUXLEY’s Brave New World provide the blueprints for a future developing along these lines.

2 Architectural Proposal

Idea 1: Empower the recipient.

Consider an architecture consisting of a web browser extension. In this extension, surfers can register a number of web addresses of sites from which they want to receive critical comments. When they are viewing web content, critical comments from these sites are added for their information. Thus the recipients of content themselves are in control from which sources they receive fact checking remarks. Facebook and Google, Twitter and Telegram no longer are in control of fact checking information and algorithms but the recipient themselves chose their source of fact checking or, if you prefer different angles of view, their source of propaganda, or their sources for their own preferred social echo chamber.

Idea 2: Open competition.

As a second element of the concept, every web browser is also turned into a server for critical comments where all news consumers can produce their own fact checking arguments. Of course, this can be implemented on the level of a web server – however we will turn every browser into a server for checking arguments. Thus, there is no longer a monopoly on commenting and fact checking, but every consumer of information can produce counterarguments, critical remarks and questions. Only this step turns the web into a truly prosumer, interactive Web 2.0! The technology for this is out there and ready: [9](#), [10](#), [11](#)

Fact Checking:

Let us fact-check and reality-prove this proposal. Certainly it sounds technically appealing to move from an architectural proposal to a proof-of-concept: Many technological questions must be solved and we can learn much from this. We might discover problems and show-stoppers along the road – the task of science is to find out if and how the problems can be solved and how the show-stoppers can be removed.

From a social aspect, the approach is naïve at best, dangerous at worst⁸ and from a realistic perspective most likely without any practical impact. For finding out we can move ahead and face the discussions and difficulties when they arise.

⁹<https://stackoverflow.com/questions/7022383/how-can-i-make-a-browser-to-browser-peer-to-peer-connection>

¹⁰<https://peerjs.com/>

¹¹<https://beakerbrowser.com/>

3 Project

We attempt to do this as a joint and open source student project. The idea is to design an architecture, specify components and APIs, make proof-of-concept studies, implement this as software and make it available to the general public in an open but viral license (GNU Affero). This, at least, is the direction into which we start moving, curious which experiences we make along the way.

For the participating students this provides a chance for joining forces in a social coding project which strives for real-world impact.

Possible forms of participation are:

1. Software project or KSWs (complex software systems). **In winter term 2021: Register for the KSWs or project activity at StudIP with Prof. Clemens Cap. We will move on from there.**
2. Bachelor and Master Thesis (when a particular topic of scientific interest has been defined in the frame of the concept)

Technology which we might use comprises:

1. Github
2. HTML, CSS, JavaScript
3. Light-weight libraries such as jQuery, Bootstrap
4. Existing state of the art in browser peer to peer communication.
5. Some individual and light-weight elements of docker and, sparingly, AWS.
6. We will design a vanilla HTML/CSS/JS application where we will utilize simple, modularized, light-weight components to avoid inventing the wheel twice.
7. Detailed, precise and compact documentation.

Technology elements which we will try to avoid:

1. Heavy-weight frameworks and opinionated frameworks.
2. All architectures, however wide-spread or practical, which may lead to a lock-in to specific methods or fashions of design or which require extensive forms of pre-processing or transpilation.
3. We will not design a heavy-weight Angular, Typescript, React, ... application where we are drawn into a specific design-methodology.
4. "Code is documentation" approaches (we rather take the opposite view: Good documentation is code).