

Software Development Proposal - Team SPUNIKNSS15

Group Members and Contact

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Projects

The projects are listed in order of preference, with the respective number of points specified in brackets.

ISGCI Subgraph Isomorphism - (4 Points)

Every member of our team attended the lectures “Algorithmen und Datenstrukturen” (Algodat) and “Mathematik Diskrete Strukturen” (MDS). In Algodat we earned basic understanding of algorithms and their implementation, including problem solving using graphs.

MDS covered graphs as well, but from a mathematical point of view. We are therefore convinced, that we have the necessary understanding of graph theory to implement the VFlib2 algorithm.

We also attended the lecture “Programmierkurs 1” one year ago, where we were introduced to the Java programming language. Since then, we used Java in several lectures. Thus we are certain, that we will quickly get used to the ISGCI environment and the API of the JgraphT library.

All in all, we are interested in the algorithm and believe our team meets the necessary requirements for its implementation in Java.

Controversy Platform - (3 Points, Custom Project)

1. Background In public discussions running over longer periods of time, it often happens that some participants significantly change their opinions on the subject. A popular example, is the reactor explosion in Fukushima, totally turning around the plans of the german government concerning the future of nuclear power plants. Moreover, it often happens that members of the same interest group have contradicting views. For instance, certain members

of the german party SPD called for a fast implementation of the concept of “Vorratsdatenspeicherung” after the attacks on the french satirical magazine “Charlie Hebdo” (January 2015), while other members strongly object to this idea.

Such changes are usually difficult to keep track of as an individual, because media covers only the last few weeks of events. It would be nice to have a platform, which makes it easy to document contradictions or shifts happening in the opinion of politicians or other public entities, allowing to measure characteristics like *trustworthiness* or *consistency of opinions* as well as *linking specific events to shifts of opinion*.

2. Project Idea The idea is to design a web platform, which allows to select statements of public entities from different sources (e.g. a part of a YouTube video, a quote in a news article or magazine, wiki entry etc.) and to relate them with one another in a meaningful way. This can be done by unexperienced users in a graphical user interface. The steps may be as follows:

1. The user specifies the question of the discussion. He can choose from existing questions or add a new one (works similar to tagging in Twitter).
2. The user selects statements of one or more persons to the question.
3. The user enters relationships between those statements, such as
 - *contradiction*: statement contradicts either
 - prior statements of the same person or
 - statements of members of the same interest group (e.g. political party or
 - a well known fact (referenced by a reliable source)
 - *answer*: statement answers another statement (maybe of another person)
 - *criticizes*: statement criticizes statement of another person
 - *etc.*

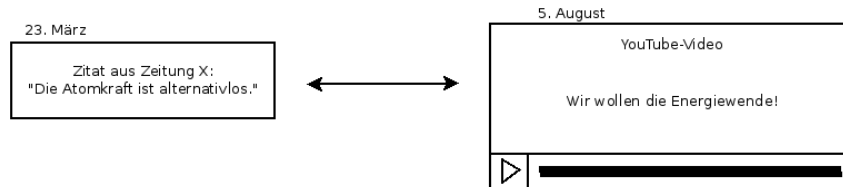
By use of a database different filters on the data are possible, e.g.

- Persons
- Tags
- Date ranges

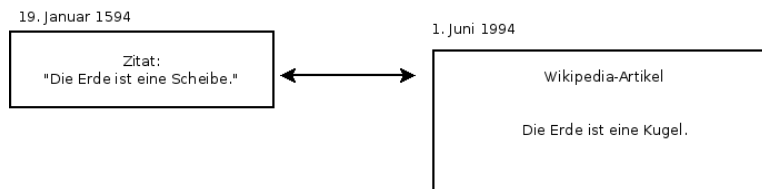
There may also be several different views, e.g.

- Person based view:

View contradictory statements of Angela Merkel concerning nuclear power

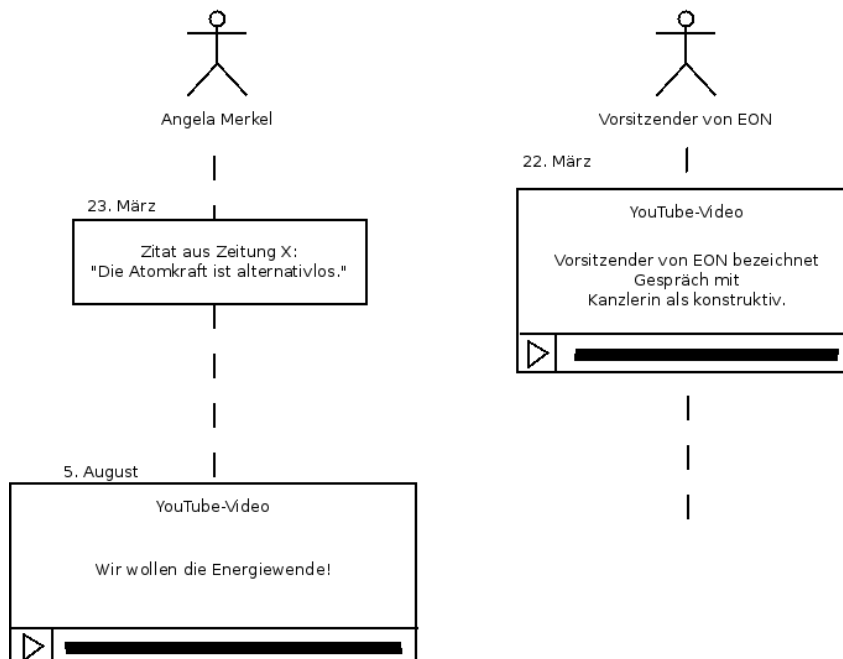


View contradictions to facts of Pope XXX



- Chronological view:

Chronological view on tag "nuclear power"



The controversy platform allows to monitor and analyze discussions and may perhaps lead to an increased focus on content rather than people and glamour. By allowing other internet sites to embed such views with certain parameters, the insights of the controversy platform could be used by journalists.

Why our Team?

1. Our motivation

Most of us have closely followed political debates for years. We often engage in discussions about topics of public interest by ourselves. We believe that unnoticed shifts of opinion of public entities can lead to bad decision making and cause damage to the quality of public discussion. In short, our team understands the problem domain and can therefore build an adequate solution.

2. Our technical knowledge

We all have experience in web development. Firstly, we attended the lecture “Datenbanksysteme” in the last semester where we learned to design relational databases.

Secondly, most of us have already worked on web projects, including e.g. the info site of the university group “Investment group” (1) and the web site of a mill store (2). As a result, we know how to use the standard web technologies (PHP, JavaScript, CSS, etc.).

Finally, we have members that are experienced in designing user interfaces for different platforms and form factors, which makes us confident that our platform will be intuitive and user friendly.

(1) <http://investment-group.org/>

(2) <http://karge-muehle.de/>

Network Manager - (2 Points, Custom Project)

1. Background Computer networking is difficult and even though the Linux kernel, device drivers and additional modules like the `wpa_supplicant` already offer some kind of “high level” abstract interface, most users will be bugged by manually configuring even the simplest kinds of (wireless) networks.

This is where a network manager comes in handy - a user friendly utility to keep track of the various configurations and settings needed so that even technically unaware personnel is enabled to set up and administer network devices.

Writing a new tool from scratch is reasonable, as most of the existing solutions either lack some kind of functionality or depend on too many other libraries and packages. This lack of modularity leads to bloated software that doesn't fit the users needs in many aspects.

2. Project Idea The scope of this project can easily be altered with regard to the intended functionality.

Minimal Functionality The bare minimum for a network manager is a command line utility to administer the interfaces found in `/sys/class/net`. This includes the possibilities to create, alter, (de-)activate and delete profiles for each network the user wants to connect to.

Possible Functionality

1. Listing accessible WLAN APs [cf. `iwlist(8)`] and LAN connections directly in the utility.
2. Declaring network families, e.g. based on a common SSID in order to easily share login information among APs in large scaled networks (e.g. Uni KN).
3. Splitting the functionality in a daemon- and client module, connected e.g. via D-Bus to get rid of the otherwise needed root privileges.
4. Integrating the daemon module into the init system [cf. `systemd(1)`], in order to activate the network managers' functionality on system boot.
5. Auto detection of more complex authentication methods [cf. RADIUS] while offering security optimized profile templates, e.g. forcing CA certificate checks and certificate subject matching.
6. Systemwide, granularity-configurable logging functionality [cf. `journalctl(1)`].
7. GUIs, either terminal based [cf. `ncurses`] or UI-integrated [cf. `GTK+`].
8. Usage and traffic stats, graphically represented to the user as diagrams.
9. Logging of detected wireless networks, possibly linked to GPS data [cf. `wardriving`].
10. Management of other networking-related wireless modules, e.g. Bluetooth.

Reference Projects

- <https://projects.gnome.org/NetworkManager>
- <https://wicd.sourceforge.net>
- <https://01.org/connman>
- <https://projects.archlinux.org/netctl.git>
- http://www.hpl.hp.com/personal/Jean_Tourrilhes/Linux/Linux.Wireless.Extensions.html

Infos

- http://www.hpl.hp.com/personal/Jean_Tourrilhes/Linux/Linux.Wireless.Extensions.html - WEXT

- <https://wiki.freedesktop.org/www/Software/systemd/> - systemd
- <https://wiki.freedesktop.org/www/Software/dbus/> - DBUS IPC