MANULAB ONLINE

To implement the Manulab online application for analysis of transcripts of historical manuscripts, we have have chosen the web environment. The advantage of such application is that it can be used by laptops, tablets and smartphones. In this way, the application is not limited by any operating system. We just implement the application for the most used web browsers.

Defining requirements

The aim is to create an application used for statistical analysis of transcripts of historical manuscripts. The first step in software development is writing requirements. User can upload transcripts of manuscripts in text files and also their image representations. Users can also modify which page they choose to have in the analysis. After selecting the pages entering the analysis, the user selects from the filter categories provided to him. It is then possible to run the analysis and the user has access to the results and also the possibility of data export. We have divided requirements into non-functional and functional.

Non-functional requirements
- Application should have good UX and should be easy to use
- Modern and simple UI design
- Analysis and manipulation with manuscripts should be client-sided
- Usability on the most popular web browsers
- Session-based data upload
- Application is usable on multiple device types(smartphones, tablets, notebooks)
- Application is written in Angular framework
- Application should be single-page, which means interaction with the user by dynamically rewriting the current web page

Functional requirements
- Responsive page size
- Application is connected with component-based architecture
- Routing for the main parts of the application
- Bulk upload
- User can define his own filter groups

- Sequence of filters can be changed
- Filters have different types, can modify text, classify and calculate statistics on text
- Filters are chained in a sequence when the analysis starts
- Filter input is a set of texts
- Filter output is not saved when exporting applied filter group
- Minimum-required input is written text
- Upload page is used to manage uploaded pages
- Filters can be downloaded in a JSON file format
- Filters can be uploaded in a JSON file format
- When uploading in bulk, image name and textfile name have to be equal

Figure 1 Use-case diagram

The diagram above speciefies the roles in our application.

User - Specifies the files he wants the page to load and display, selects from the category of filters he wants to load and can edit filters according to settings. User can delete the applied filters, run the analysis and also export the analysis results. The search bar can be used to to search among all the filters. Filters can be exported in JSON format.

Webapp layout

For the design and integrity of the application, we decided to create a wireframe for the web application. Using a wireframe, we can sketch how the individual components and thus the content elements will be distributed on the website. The reason for using a wireframe is to create a structure which ensures the purpose of the web application.

Application structure

Our application consists of the following subpages:

● Home page - the page is used to acquaint the user with the intention of the web application and its parts.

● Upload page - user can upload documents to the application and also edit and delete them.

● Analysis page - used to perform analysis using user-selected filters and overall work with uploaded documents in terms of analysis. On this page the user can also export the applied filters and also load them from the format JSON.

● Analysis result page - displays the user the results of his analysis as well allows export of data from performed analyzes.

General page layout

Each page in the application should be created using the same pattern consisting of the header, page body and footer. The header holds the name of the page along with the navigation menu intended for movement in the application. The body of the page is a variable part as each page of the application will have different content. The footer of the page shows the project name and the year of its creation.

Figure 2 Home page

On the home page, user can see the description of the manulab project and its goal. User can use the navigation to move to other pages. The modal type window is also displayed to the user on this page filters in an application with information describing how these groups of filters work. The user will also see a pop-up with infographics for each species filters in the application. Infographics are in modal format and can be displayed whenever the user wants user explanation.
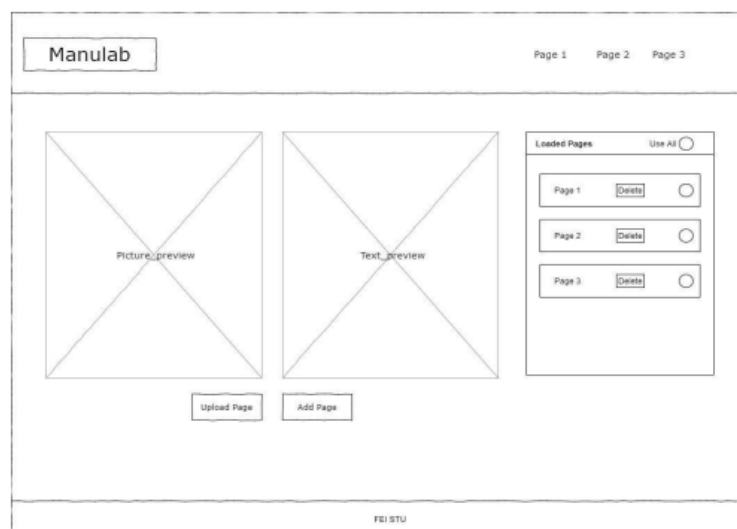

Figure 3 Upload page

On the Upload page, the user can upload the files needed in the analysis. For confirmation of page upload, the user selects the Add Page option and the pages will be added to the list of uploaded pairs of text files and their graphical representations.

In this list, the user selects the pages to use in the analysis and can delete them. Upload page also serves as a instrument for manipulation of the loaded documents. When the user clicks the Upload Page button, a pop-up window will appear prompting user to choose a local file. The user can upload pairs of text files and images in bulk upload mode. After uploading only the image without a text pair, the user is pointed out the absence of text of the document.
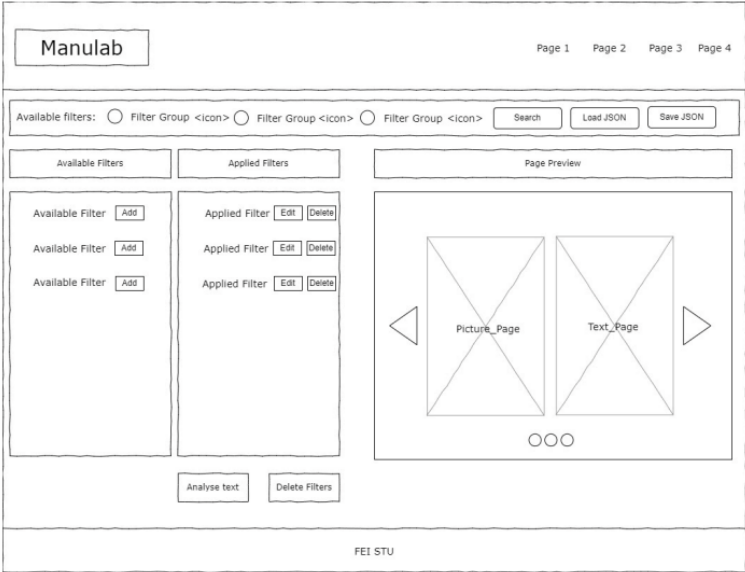

Figure 4 Analysis page

The Analysis page performs a statistical analysis of the loaded files. Under the navigation menu we can see menus for groups of filters, which are in addition to names also distinguished using icons that will be used to distinguish filters when combining filters from multiple filter groups. In the list of available filters, clicking on one of the filter groups will display the filters from the group. In the search bar, the user can search from the available filters impemented in the application.

The upload filters button allows the user to upload saved filters to the application in the applied filters list. This file is in JSON format and is generated by our application during export phase. The user can click the Add button or move the filter to the list of applied filters. A filter is created in the applied filters and can be edited according to the specifications given filter.

All items in the list are interchangeable, which means they can be changed the order in which the analysis will be performed. Filters can be deleted in a bulk or one by one in the applied filters list.
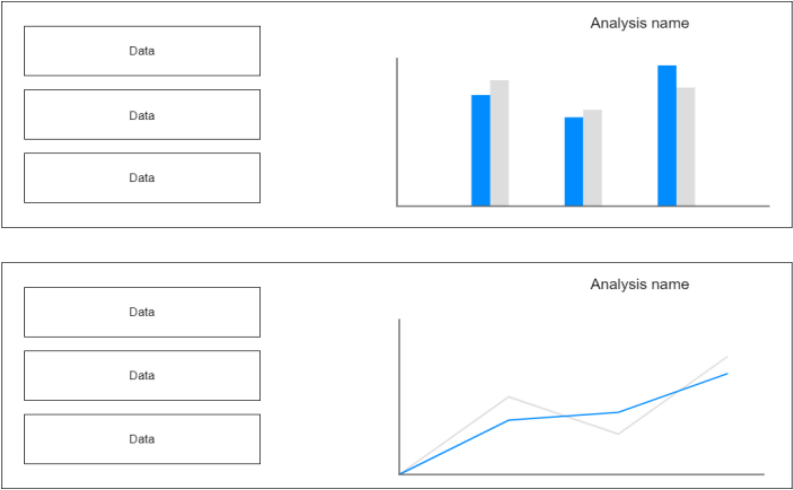

Figure 5 Analysis results

The last page of our application is the Analysis result page. Here, the user can view output of analysis represented in a tabular format or depending on filter type via graph. The corresponding graphs and tables are displayed for the data according to the characteristics of the output data. The user can also export data to CSV format for further use.