Construction and analysis of an administrative university structure and its web-resources

(graduation thesis)

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Webometrics and investigation of scientific web-resources

This research is relevant to webometrics - a perspective field of informatics, concerned with measuring aspects of the web.

Analysis of separate web fragments is one of the webometrics aspects. The main interest here is an investigation of govern thematic web-resources including web-sites of universities, academies, etc. Good organization of information there is very important factor.

Hypothesis: administrative and web structures of scientific institute should be partly similar to achieve better usability of its web-resources.

Research tasks

Investigation object: Petrosavodsk State University.

Tasks:
• to study main features of hierarchical structures (especially, graphs) in respect to universities,
• to model administrative university structure,
• to model university web-resources structure, where separate web-domains are vertices and hyperlinks between them are edges,
• to apply algorithms for graphs visualization.

Instruments

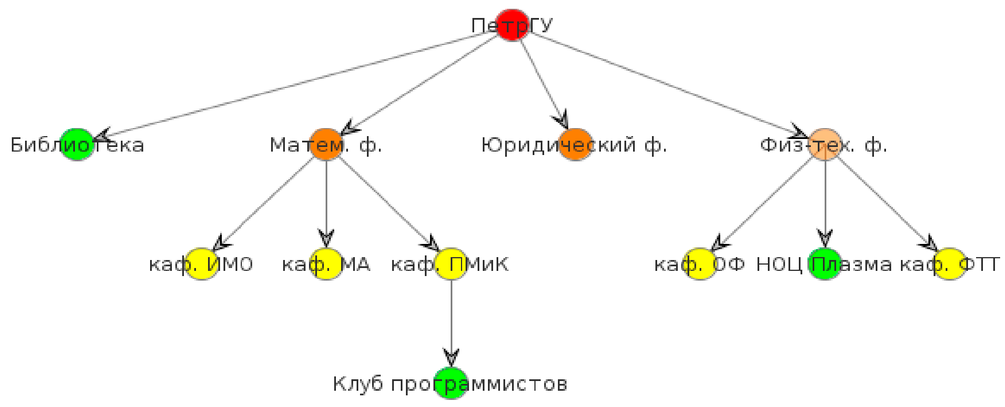
•Yahoo! Search Engine*,
•Eclipse IDE (Galileo 3.5),
•JUNG 2.0.1 (Java Universal Network/Graph Framework),
•graphviz 2.26.3 (Graph Visualization Software).

*The instruments of Search Engine Optimization (SEO) can improve and accelerate all stages of such webometrics researches, which are connected with hyperlink search and count. Yahoo! search engine was chosen because of its' convenient hyperlink search and domain investigation services.

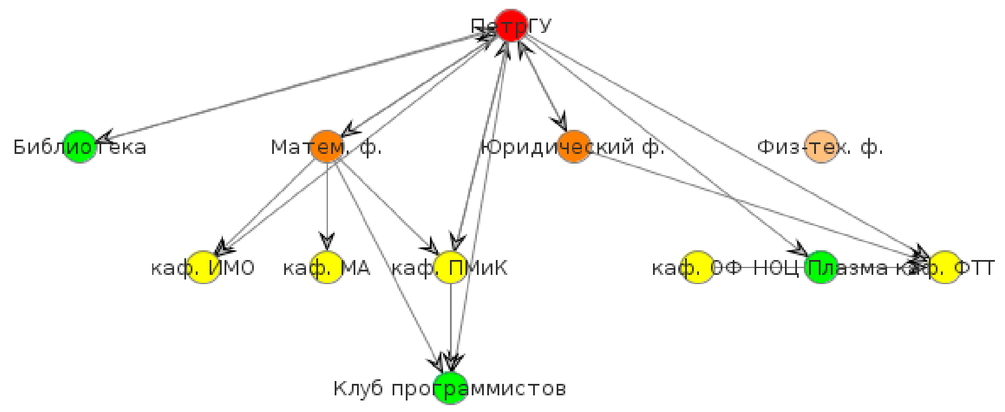
Results

PetrSU administrative structure was modeled according to the information from official site www.petrsu.ru and to the comments of experts.
For the hyperlink search I've created the program (Java-applet), which allows to contact with search engines via HTTP-requests and to visualize graphs.

Example of obtained graphs (for the fragment of university)



administrative structure of university (fragment)



hyperlink structure of corresponding web-resources (fragment)

Fragment contains the faculties and units with good web-support, obtained result shows this: two structures visually resemble each other. It makes moving between administratively close sites more convenient and fast.

Further work

•to study specific features of obtained graphs,
•to develop the set of procedures for simplifying the web-resources graph,
•to study graphs-comparing algorithms and to find the more appropriate.

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