

ScienceDirect® goes social: a social network for scientists integrated with online digital library

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Overview

Online digital libraries exist for a long time, offering works in a large number of domains. A lot of work has been done to enrich the functionality of such systems: citations, research genealogy, keyword search and a lot more.

Our idea is to fuse social network and such digital library and introduce not only usual social network features, but a possibility to discuss papers.

Also, a scientist's notebook for keeping ideas and reviews privately was done.

The proposed system offers a type system over comments which can lead to an interesting queries:

- What did a scientist X think about problem Y?
- What are the most active research topics in the domain of X?
- What are the most disputed papers?
- A lot more of simple (but still useful) queries which can be answered by our system.

Social Part

The well known social network features which become a standard de-facto:

- 1) Personal profiles
- 2) Groups or communities
- 3) Personal messaging
- 4) Privacy mechanisms – the problem is to integrate access of many people from the same institutional login (additional authorization)

Paper Information Management Part

Private Notes

Public comments



Types of comment:

- Inconsistency or contradiction – this type of comment is applicable when the fact stated or used in the paper contradicts to your opinion, or to opinion of others. In this case a **Linked Paper** field might come in handy.
- A question – is different from the latter. This is a merely a clarification request. Very useful when bound to **Text Anchor**.
- Answer – an answer to both of these two previous question types.
- Support – a type of comment to indicate that you agree to the information provided. It can be backed up with a **Linked Paper**.
- Non-related comment is given to all other possible types.

Comment or Note

- 1) **Comment Author**
- 2) **Commented Paper**
- 3) **Text**
- 4) **Date**
- 5) **Comment Type**
- 6) **Linked Paper**
- 7) **Text Anchor**

Related Work

ACM Digital Library author profiles (beta): a comparison

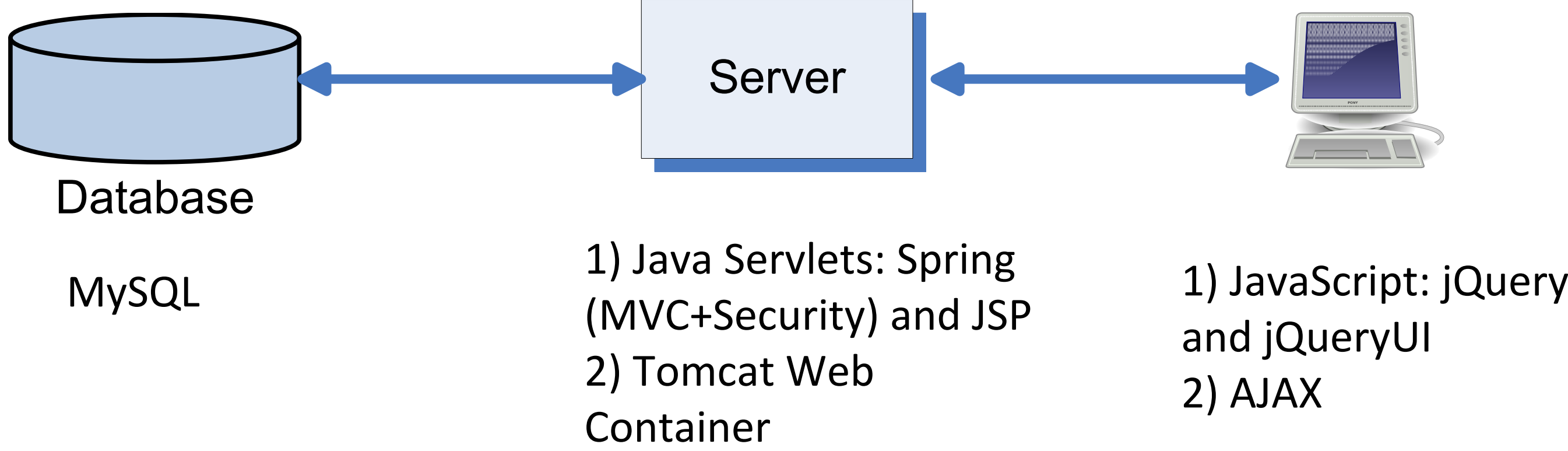
Strong points:

- More oriented on static profiles
- Entity disambiguation works
- Affiliation history (ordered)
- Complex bibliometrics features
- More content: photos, awards
- Still beta, probably more to come

Benefits of our approach:

- Live discussions in context of paper content
- Complex queries to comments, opinion mining
- Scientist's notepad
- Communities and personal mail
- Promotion of inter-domain collaboration

Architecture and Implementation Details



Major Problems

Technical

Scientific

Cross-Site Scripting

Architectural Issues

Anchor Domain Operations

- 1) This restriction leads to problems with implementing markup of paper text with comments
- 2) The same restriction hampers information flow in another direction: our application doesn't know the paper being browsed, if it is not told explicitly

- 1) Performance issues: currently a toy examples
- 2) Privacy issues

Operations on text anchors: resize, merge and security problems

Entity Disambiguation

Combining Results of Search Engines

How can we distinguish differently spelled names, for example to notify author of comments?

This is a well-known problem and a lot of approaches exist

In some cases (for example when no comments found), we can return a paper which is considered relevant, but was not discussed before. In order to do that, we should be able to traverse ScienceDirect® with it's API

Future Work

Short-Term

- 1) Automatic fill-in of comment forms
- 2) Proper additional markup of papers
- 3) Simple profile Content-Based recommender
- 4) Mixing-up results of provided API search and constructed search engine

Long-Term

- 1) Entity disambiguation
- 2) Complex Collaborative Filtering Recommender
- 3) Privacy issues: privacy preserving groups, etc

A Really Long Way

- 1) Flash-based Collaborative paper edition tools
- 2) Automatic formatter to different journal formats
- 3) From groups to conference registration and review systems

And a lot more!

Try decoupled demo at: <http://adm2.math.spbu.ru:84/springapp/Login.html>