CS353

Database Systems

Scientific Papers Data Management System

Project Proposal

Group 3

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1. Project Description

This project aims to design a database system for keeping track of scientific publications, authors, conferences, institutions, reviewers, editors and subscribers. There are different cases that explain the relationship between these entities and there are different constraints for entities and their relationships.

As a general user, subscribers can view, search and filter publications. When they find the publication they are searching for, they can view some information about the publication such as the author, publisment date, download count and some other details. Each subscriber may subscribe to many journals. As they become a subscriber of a journal they can get notifications about the subscribed journal. Subscribers can belong to institutions.

Authors must have a subscriber account to make a submission. Once they have their account and confirmed as an author, they can make publication submission to many journals and conferences. However, each submission can only be published in one conference or a journal.

There is a chain of events during publishment of a submission. After the author/authors make their submissions to conference/journal, first the editor decides whether the submission is suitable for the applied publisher, if the editor finds it unsuitable he/she can reject the submission. If the editor finds it suitable, he/she invites one or more reviewer to peer review the submission for content examination. Reviewers can accept/deny invitations. Each reviewer must be an expert in the topic of the submission. Reviewers who accept invitations must give a feedback to the editor within the specified time period. According to the feedbacks, the editor may choose to reject the paper, send it for a revision/resubmission or approve submission. If editor chooses to send it for resubmission, author must clarify the changes. If the editor chooses to approve the paper, he/she corrects the grammar, style of the paper and sends it to author and asks for approval. When the author/authors approve the submission, publisher publishes the paper at the specified publishment date. Some publications might co-operate with institutions which provide them necessary tools/labs etc.

Publications may have sponsors which provide some research budget to the publication and its authors. Sponsors may have some threshold goals for the publications they sponsored.

Some publications which have industrial application can have patents to protect their use of rights. Patent must have a patent id number, patent date and a publication.

For example, a publication can be written by many authors and can be submitted to many conferences. However, it can be published in a single conference or journal. After the submission, reviewers and editors decide if the submission will be published or not.

Publications which are published in a conference must be presented by its authors and additionally the editor or reviewer of the publication can also join the presentation. Conferences can have audience which can be subscribers or other people who want to attend the conference.

2. Project Requirements

2.1. Functional Requirements

2.1.1. Reviewer Requirements
- Reviewers should be able to accept/decline peer review invitations from editors.
- Reviewers should be able to view the submission if they have accepted the peer review invitation.
- Reviewers should be able to approve or reject the submission by sending a report to the editor.

2.1.2. Editor Requirements

- Editors should be able to examine submissions.
- Editors should be able to reject submissions if the submission is unsuitable for the journal.
- Editors should be able to ask for revision of the submission if the submission can be made suitable.
- Editors should be able to approve the requirements and ask for peer review from more than one reviewers if the submission is suitable for the journal.
- Editors should be able to approve/reject to publish the submission according to peer reviewers' report.
- Editors should be able to edit the submission for style (citations, references, tables, clarity, grammar etc.) before sending it to publication.
- Editors should be able to ask authors to approve final submission.

2.1.3. Author Requirements

- Authors should be able to make new submissions to journals and conferences.
- Authors should be able to edit their submissions by specifying the changes.
- Authors should be able to cancel their submissions.
- Authors should be able to view the status of their submissions.
- Authors should be able to search for publications, institutions, journals and conferences.
- Authors should be able to view details of publications, institutions, journals and conferences.
- Authors should be able to approve/reject the finalized submission.
- Authors should be able to demand patent for their publications.

2.1.4. Subscriber Requirements

- Subscribers should be able to view publications.
- Subscribers should be able to subscribe/unsubscribe journals and conferences.

2.1.5. Sponsor Requirements

- Sponsors should be able to make a sponsorship offer to publications.
- Sponsors should be able to set a sponsorship goal to the publications they sponsored for.
- Sponsors should be able to set a budget for the publications they sponsored for.

2.1.6. Audience Requirements

- Audience should be able to attend conferences.

2.1.7. System Requirements

- System must keep track of how many publications a reviewer is currently working on.
- System should remind reviewers as their feedback deadline gets close.

2.1.8. Pseudo Requirements

- MySQL will be used for database management.
- Front-end of the web application will use HTML, CSS, Javascript, Bootstrap, Ajax and jQuery.
- PHP will be used to develop back-end.
  * (Future changes might occur)

2.2. Non-functional Requirements

2.2.1. User Friendly Interface

- Our design will assure a simple way of surfing through the web application. As the domain of users are of science related fields, yet not all of them are familiar with web technology. Hence, it will provide an easy-to-understand interface to perform all tasks: submitting publications, modifying, assigning, reviewing, searching, etc.

2.2.2. Easy Maintenance

- The architecture of our application will follow a modular, layer approach. this approach makes it easier to debug errors and apply future changes.

2.2.3. Reliability

- As our system will be used for scientific purposes, it cannot bear errors. The data provided by the application should be true and always consistent. Submissions are not made available to public until all submission process is finalized. It is not possible to make changes to publications after they are published. Users should be able to access available papers at any time.

2.2.4. Quick Response Time

- Quick response time depends on two factors: the time it takes to retrieve a paper related to search query, and to the size of documents retrieved. For search, we will use algorithms to detect matching papers as fast as possible depending on similarity of words. Pagination will be used to limit papers retrieved per page view. Pagination can also be applied to a single paper view if it is long. Multimedia that is part of the paper (photos & videos) should load fast, not affecting user experience.

2.2.5. Security

- Non-subscribers should not be able to view content of the application nor download it. Viewers cannot see pre-publication process/history. For security reasons no functionaly of deletion is supported, however deactivation/hiding is possible.

3. Limitations

- An author cannot cancel his submission after it has been published.
- An author cannot make a submission to a journal/conference which is not related to journal/conference topic.
- An author must include a revision note to its re-submission.
- A publication should be published in only one journal or conference.
- A submission should be approved by both editors and reviewers to be published.
- An editor cannot invite someone as a reviewer who is not an expert in submission topic.
- Reviewers must give their reports within the specified time period.

4. Conceptual Design
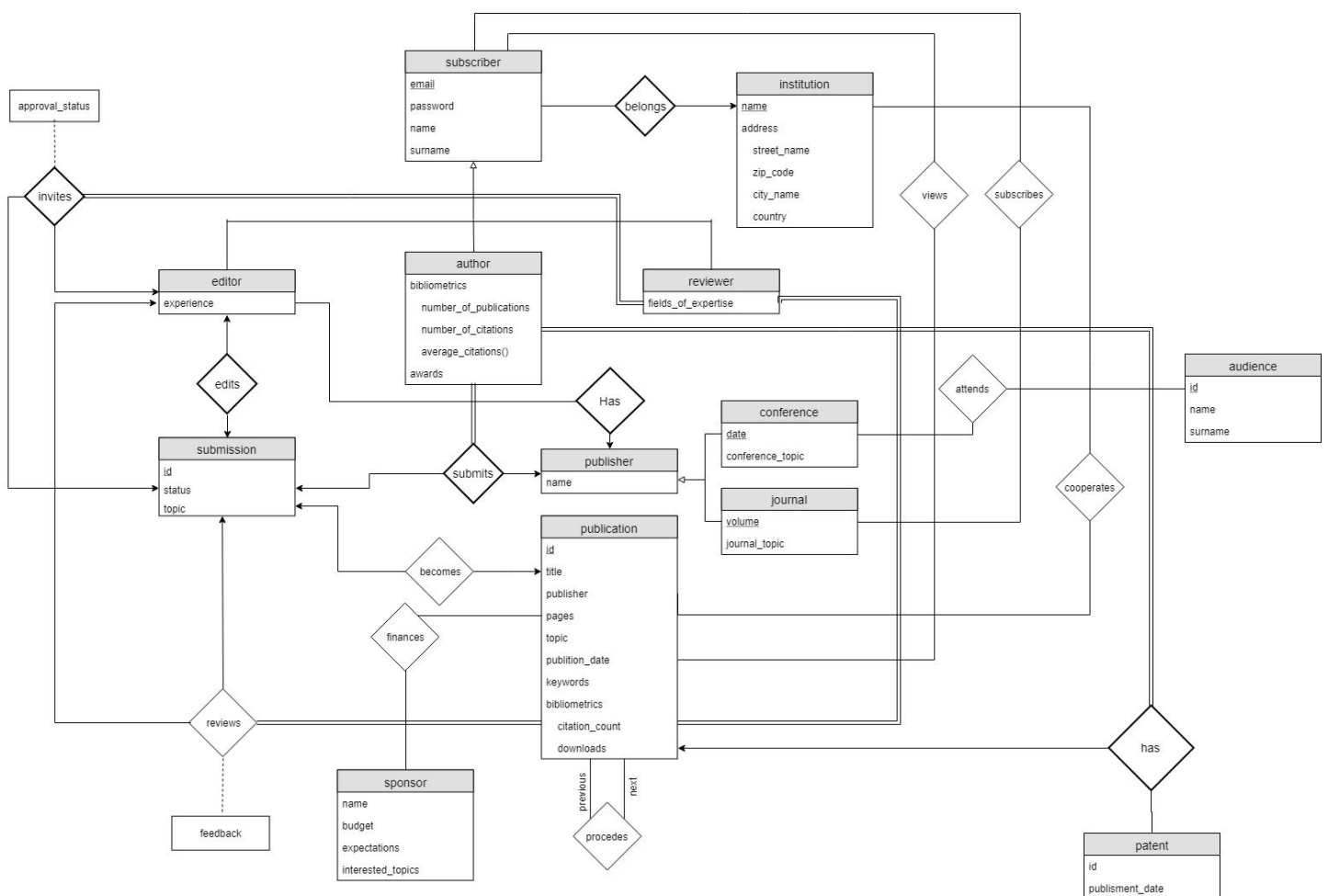
5. Web-Site

6. Conclusion

Scientific Papers Data Management System is a web-based application for managing and viewing scientific publications. The system can be used by subscribers of the system. Different subscription types such as author, editor, reviewer has different tasks and functionalities to perform.

In this report, we tried to propose a overall system. We illustrate the system capabilities in the description of the project. We identified, the use cases and functionalities of the system in functional requirements. We also express the non-functional, system and pseudo requirements clearly as possible to propose a well functioning system. After finalizing requirements, limitations of the system is declared.

Finally, web-site of the system is given and conceptual design is presented.