Synchronous and Asynchronous Collabrative Writing Methods on the Cloud

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Abstract
In Academic writing, school and college students need to create common documents collaboratively. I-write tools provide means for creating and managing collaborative and individual writing assignments in large number of groups. Implementation can be done by deploying the I-write tools on the cloud, by using some cloud service providers such as Microsoft's windows Azure or Google's Google docs. Assignment manager is a third party cloud services and it has to be designed to use the cloud computing applications and their API's as well as allocation of courses to the group of students in collaborative writing. The NLP technique is used in I-write tools to provide automated feedback, automatic question generation and process analysis techniques. By using these techniques the student can pass the document to the next student and he can easily work on the same common document by getting the metadata of that document. The collaborative writing has two kinds of methods, such as Synchronous and Asynchronous Collaborative writing methods by using I-write tools on the Cloud.

Introduction
The architecture for a new collaborative writing support environment is used to embed such collaborative learning activities in engineering courses. I-Write provides tools for managing collaborative and individual writing assignments in large cohorts. It outsources the writing tools and the storage of student content to third party cloud-computing vendors (i.e., Google).

I-Write system effectively allows researchers and instructors to learn more about the students writing activities, particularly about features of individual and group writing activities that correlate with quality outcomes. The Collaborative writer can produce a efficient writing result. The evaluation provides data collected in general classroom activities and writing assignments (individual and collaborative), using mainstream tools yet allowing for new intelligent support tools to be integrated. These tools include automated feedback, document visualizations, and automatically generated questions to trigger reflection.

A combination of synchronous and a-synchronous modes of CW (Collaborative writing) is used in computer-based text analysis methods to provide additional information on text surface level and concept level for writing the groups.

Automatic question generation and Collaborative writing is not available in the existing system. Commonly used patterns, such as when different members of a group work on different parts of the document which lack concurrency. Although synchronous writing tools have been available for many years, it is become mainstreamed recently. One reason might be that the tools normally used were designed for individual writing and require many files to be emailed between authors, often leading to problems in the collaboration process.

In this paper we propose a system which provides architecture for supporting CW (Collaborative Writing) was designed with both pedagogical and software engineering principles in mind. The proposed system provides to manage writing activities in large cohorts, particularly the management and allocation of groups, peer reviewing, and assessment

Collaborative Writing
Collaborative Writing Methodologies are the process of analyzing the principles or procedure of a Collaborative Writing System on Cloud System.

CW (Collaborative Writing) defined by Lowry "an iterative and social process that involves a team focused on a common objective that negotiates, coordinates, and communicates during the creation of a common document" [1]—is a cognitively and organizationally demanding process.

Collaborative Writing has following Features
- A combination of generic and computer generated personalized feedback. The generic feedback includes interactive multimedia animations and content.
- The architecture incorporates features for feedback forms such as Argument quality, features of text (such as coherence), automatic generation of questions, and feedback on the writing process.
- A combination of synchronous and asynchronous modes of CW.
- The use of computer-based text analysis methods to provide additional information on text surface level and concept level to writing groups.
- The use of computer-based process discovery methods to provide additional information on team processes. The combination of these methods with text mining ones is particularly novel, and will allow feedback about team processes based not only on events but on their semantic significance.

The following are the two main methods involved in Collaborative Writing System.

- SYNCHRONIZED PATTERN
- A-SYNCHRONIZED PATTERN

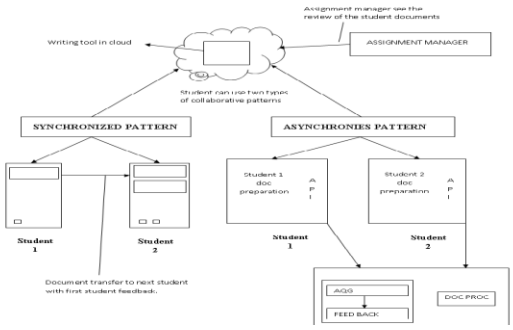
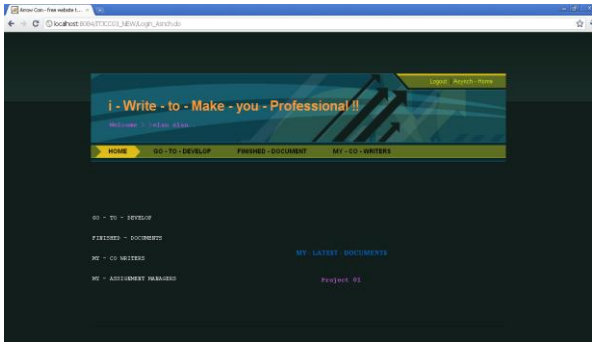


Figure .1.1 Architecture Diagram for Collaborative Writing Tool

SYNCHRONIZED PATTERN



In this method user can write a document collaboratively, in the synchronized manner. For Example three students can complete the writing work one by one. This method includes the following entities,

CLOUD ADMIN STUDENT ASSIGNMENT MANAGER

- **CLOUD ADMIN**

By using this entity cloud can monitor the students and assignment managers. It is used for verification, authorization, peer reviewing for students and reviewers or assignment managers.

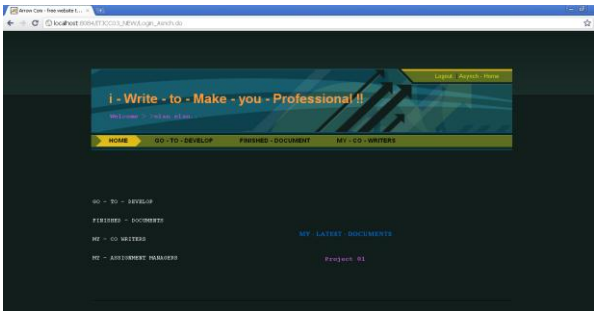
- **STUDENT**

By using this entity student or researchers can develop the document in synchronized manner and in this cloud generate automatic feedback for each student after the document completion and also student can get some reference ideas from another student or assignment manager.

- **ASSIGNMENT MANAGER**

In this entity assignment manager can check the student document from the cloud with each student feedback. The Assignment Manager is designed to use cloud computing applications and their APIs. This means that the writing tool and the documents themselves are managed by a third party. This significantly reduces the cost of managing a system with large number of students, and a Service Level Agreement (SLA) ensures that assignment documents are always available.

ASYNCHRONIZED PATTERN



By using this method a student can develop the document in asynchronous manner. For example three students can write at the same time and can share ideas on cloud. This method includes the following entities,

CLOUD ADMIN STUDENT ASSIGNMENT MANAGER

- **CLOUD ADMIN**

By using this entity cloud can monitor the students and assignment managers. It is used for verification, authorization, peer reviewing for students and reviewers or assignment managers.

- **STUDENT**

By using this entity or researchers can develop the document in asynchronized manner and in this module cloud generate automatic feedback for each student after the document completion and the assignment manager verifies the document for individual students.

- **ASSIGNMENT MANAGER**

In this entity assignment manager can check the student document from the cloud with each student feedback. The Assignment Manager is designed to use cloud computing applications and their APIs. This means that the writing tool and the documents themselves are managed by a third party. This significantly reduces the cost of managing a system with large number of students, and a Service Level Agreement (SLA) ensures that assignment documents are always available.

Related Work

We collected informal feedback from the course lecturers who used I-Write. They were extremely positive about the experience. One course manager commented "An online assignment submission system will save us a lot of time sorting and distributing assignments. In addition, we send copies of a portion of our assessments to the Learning Centre, so online submission really minimizes our paper usage." For example, students found the use of Google Docs and the automatic submission process confusing, "A number of students tried to upload a word document or created a new Google document, rather than cutting and pasting in to the Google document we had created for them" There was also criticism of the layout and lack of styling options in Google Docs, "Google Docs seems to act like one long page, so students work was not well formatted."

Conclusion

In this paper, a key design aspect is the use of cloud computing writing tools and their APIs to build tools that make it seamless for students to write collaboratively either synchronously or asynchronously. The data mining tools should have access to the document at any point in time to be able to provide real time automatic feedback.

A final design guideline is based on the principle that advanced support tools should be embedded in real learning activities to be meaningful for the students. It also incorporates scaffolding that academics can use to incorporate collaborative writing activities.

The future evaluation work will include showing statistical information to instructors and inquire the information about the data and how these data can be used to inform their pedagogical designs.

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