TECHNISCHE UNIVERSITÄT DRESDEN

Department of Computer Science Institute for Systems Architecture, Chair of Computer Networks

Master Thesis

GRAPHICAL DISCUSSION SYSTEM

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Statement of authorship

I hereby certify that I have authored this Master Thesis entitled *Graphical Discussion System* independently and without undue assistance from third parties. No other than the resources and references indicated in this thesis have been used. I have marked both literal and accordingly adopted quotations as such. They were no additional persons involved in the spiritual preparation of the present thesis. I am aware that violations of this declaration may lead to subsequent withdrawal of the degree.

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ABSTRACT

A discussion of the teaching content or the educational material is always essencial for both tutors and students in the teaching activities. In traditional way, a discussion can only be performed normally after courses also requires the absence of the students as well as the tutors.

The traditional approach of discussing shows its limitations. Inefficiency in knowledge acquisition: not all the students have the same question and the tutor is able to provide explanation for only one question at same time; time-consumption: ; low interactivity:

Thus, a discuss system with intense interactivity as well as in crowdsourcing way is highly needed. To achieve high interactivity, a discuss system with graphical tool and real-time data communication is proposed. Students are able to contribute their questions and answers to get to the bottom of his deficiencies of teaching content and the educational material. And students who has the same questions can instantly acquire the best solution which is recommended and approved by the community.

In order to validate and evaluate the concepts of this approach, an implementation of the proposed solution is developed on top of modern web technologies. Moreover, a usability questionnaire survey is proposed and delivered for a quantized evaluation of the client application. The performance of this application is also evaluated at the same time through the created simulation scenarios.

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1 INTRODUCTION

With the rapid development and popularization of internet and technology, the traditional educational activities are moving to the online platforms. MooCs like ..... have taken the responsibilities and ... to .

Tell some histories!

1.1 MOTIVATION

What's the situation now?

Pain?

1.2 GOALS AND RESEARCH QUESTIONS

What's the features of the new system?

What's the problems/question am i solving?

1.3 THESIS OUTLINE

Outline

2 BACKGROUND AND RELATED WORKS

2.1 ONLINE Q.A. SYSTEMS

2.2 MOOCS

3 STATE OF THE ART

The following chapter gives an overview of state of the art. To achieve the high interactivity and responsiveness in the graphical discussion system, a lot of modern web technologies should be applied.

However, there are always plenty of alternatives for each technology which could differ from system to system. So it is important to investigate and analyse the existing solutions and capture an overview about different alternatives of technologies. It's is also vital to understand the benifit and drawback of the technologies used. In addition, a

First of all, the general modern web technology and development workflow will be introduced, which goes through our whole development and has a great impact on the development efficiency. The next part describes the different graphical technologies on web, and which fits our system best. Then an overview of the real time communication technologies is illustrated and evaluated. At last, a collection of modern technologies applied within the backdend server is listed.

3.1 MODERN WEB DEVELOPMENT

3.2 GRAPHICS ON THE WEB

3.3 REAL-TIME COMMUNICATION

3.4 EFFICIENT SERVER SIDE

4 AIMS AND OBJECTIVES

4.1 BASIC FUNCTIONALITY

4.2 HIGH INTERATIVITY

4.3 DESIGN AND PROTOTYPING

5 CONCEPTION

5.1 DATA MODEL

5.2 GRAPHICAL DATA CONVERTION

5.3 REAL-TIME DEMAND

6 IMPLEMENTATION

6.1 ARCHITECTURE

6.2 SERVER

6.3 CLIENT

6.4 DIFFICULTIES AND OPEN QUESTIONS

7 EVALUATION

7.1 USABILITY

7.2 SYSTEM OVERLOAD

8 CONCLUSION AND FUTURE WORK

8.1 CONCLUSION

8.2 FUTURE WORK

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