

Clicker System Optimization

Seminar report

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Abstract

Clicker is used by CRS(Classroom Response System), SRS(Student Response System), ARS(Audience Response System) and many more. This report presents an overview of clicker system optimization. These kind of methodology accepted for improving active participation of students. Software clickers are implemented to support clicker in portable device like smartphone tablet and pda. This report also presents different types of learning technique, which are taking on line quizzes, student can ask questions, [7] are clickers as hardware for communicate between student and instructor through SMS. Finally this report propose the solution of solving problem statement and also trying to solve issues.

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Chapter 1

Introduction

Clickers are a medium of communication between students and instructor. It is one of the most important factor in making effective learning for a student's future growth [3]. Clicker system is one of the best E-learning system software. Clickers can communicate through wireless medium and RF(Radio Frequency). Clicker development has been initiated by IIT Bombay in 2010, it was the second version of clicker. Which purpose as a reading and writing tool, that help student to achieve knowledge and growth. In currently education system in the school and college there is lacking of interaction between the instructor and students due to increasing number of students in the school and college and many more. So that, there is need to improve a software for make interaction better between instructor and student. Clicker system software is developed for education and other organization too, which is using open source technology within the IIT Bombay. Actually main idea of this type of software is to initiate and communicate between a instructor and student using cutting edge technology.

1.1 Clicker

Clicker takes action as medium of communication between student and instructor [7]. Clicker use radio frequency and infrared technology for transmitting and receiving text message and data. Clicker can be supported by any device like smart-phone, tablet, personal computer and pda, etc. All student should carry clicker device in the class-room, teacher can ask questions and post quiz during the class, and students will be able to give response through clicker device.

1.2 Advantage of clicker

- Clickers are medium of communication between student and instructor.
- Student can make communication by wireless and radio frequency medium. Student can able to ask his/her doubt during class time.
- Use of this tool, it makes better understanding of course material and individual growth.
- It also improve quality of education.



Figure 1.1: Third version of the clicker system [2]

- The solution of solving problem statment.

1.3 Disadvantage of clicker

- In early year if hardwares were use in class room, then cost factor comes between learning, which is installation and maintenance cost,etc.
- Each and every student should have clicker device.
- Required internet connectivity during the class.
- During class it may be happen loss internet connectivity.
- Some student who can not afford smart-phones, tablet and personal computer.



Figure 1.2: First version of clicker [2]

Chapter 2

Clicker development at IIT Bombay

2.1 First Version

Clickers are a medium of communication between student and instructor is one of the most factor in make a effective learning for a student future growth Clickers are communicate through wireless medium and RF(Radio Frequency) [2]. Clicker development has been initiated by IIT Bombay in 2009, It was the first version of clicker. It was simple and potable device. In version-1 clicker system device had not LCD display for display user status. So that student gets confused that his/her response reached successfully to instructor side or not. When instructor conduct quiz mid of the class. That time student also get confuse during answering question because student do not have idea about which questions all ready attempted and which has been not attempted. Then after that regarding version-1 clicker system some bad feedback has came then again second version of clicker system was development by IIT Bombay in 2010.



Figure 2.1: First version of clicker [2]

2.2 Second Version

Second version of clicker uses the same radio frequency technology. But apart from [2], IIT Bombay improved more set of feature. Which is LCD display and acknowledgement now help of this system student can able to see his/her response and also they can see how many question marked has been done successfully.



Figure 2.2: Second version of the clicker [2]

2.3 Third Version

Third version of clicker system has been development by IIT Bombay in 2012. which a complete web based version of clicker software [4]. It also used the same radio frequency technology as well as wireless third version of the clicker was used of first version of Aakash Tablets.



Figure 2.3: Third version of the clicker system [2]

2.4 Fourth Version

Fourth Version of the clicker system. Currently clicker software which combine the best best techniques from web technology and android application [4]. In version four has been introduce two set of features, which is local mode and remote mode.

1. Local Mode:- This mode is used to conduct an on-line quiz in class-room.
2. Remote mode :- This mode is used to connect different college and main center server would launch quiz, which will be displayed in all connected remote center through Internet connection.



Figure 2.4: Fourth Version of the clicker system [2]

2.5 Clicker Configuration

A system must meet the minimum following requirements [1].

1. Ubuntu 10.04 or Ubuntu 12.04 Operating System,
2. 1GHz x86 Processor, 1 GB RAM, 10GB Disk Space and Video support of 1024 x 768 Resolution
3. Wi-Fi router properly configured and
4. Aakash tablets (fully charged).

2.6 Different Levels

Clicker software is to be configured at three different levels [1].

1. Server
2. Wi-Fi router
3. Aakash tablet

2.7 Home page at instructor side

1. Instructor login page:- Forgot password , after successfully changing the new password instructor will be automatically redirected login page.
2. Course selection:-
3. Raise hand:-

4. Pending raise hand :-
5. Poll:- This feature is used for conducting like poll for student within a class-room
6. Attendance
7. Quiz
8. Performance



Figure 2.5: Home page at instructor side-1 [1]

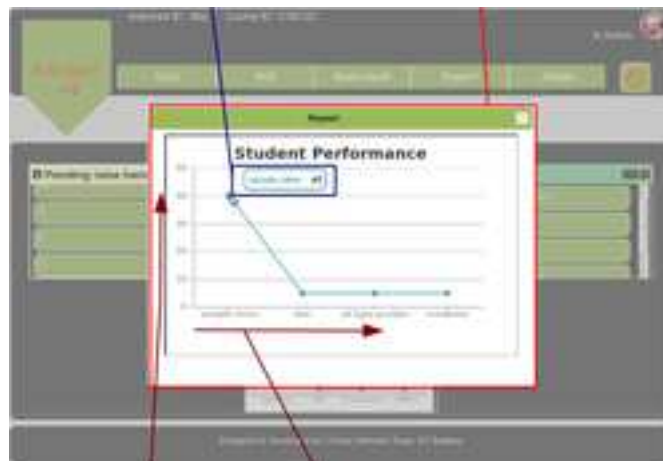


Figure 2.6: Home page at instructor side-2 [1]

Chapter 3

I-clicker Tools

There are three types of i-clicker tool:-

1. API

- Implementation API :- In API it may be possible that program can quickly and easily change for communicate using the information.
- Modify:- Developer can make change in the API, like polling type, voting , etc.

2. LDAP Solution

- Implementing LDAP:- It provide access to personal information and management of data by LDAP.
 - (a) Create link for required authentication.
- Using LDAP :- Eliminating confusion regarding the appropriate student ID.
 - (a) The student login your authentication system.
 - (b) Student should enter his/her i-clicker remote Id for security verification.
- Registration database:- Student have to select the registration link and enter the relevant information which is required on the screen, like
 - (a) First Name
 - (b) Last Name
 - (c) Student ID
 - (d) Remote ID

3. I-Clicker integrate

- Clicker integrate:- Clicker directly communicate with student and instructor.
- Administrator :- Administrator can be easily integrated in CRS,ARS,etc.

3.1 How does clicker work

When student in the class room with connect wire and wireless network in laptop, tablet and smart-phone. I-clicker supports any type of device. Student can be easy to setup on the devices which do support i-clicker and instructor should also use same i-clicker tool. It is easy to use any one because it is no need to learn about i-clicker, just enable the application . Instructor enable to ask multiple answer-question from instructor remote side. Now student wait for session code which share by instructor. When student got session code then student have to login with i-clicker system and start to answer.

3.2 Class-room Response System

When instructor teaching large number of special course [4] [6]. Then how do know instructor. Student following all those thing during the class or not and some other student also they can divert his/her in other way. In 1980 clicker was using a wire connection. But that was not success because need more hardware device and also due to cost. Some college required to student purchase clicker system device and other provide the reservation basis. So class room this system must be installed both of the device.

1. multiple choice
2. true/false
3. numeric
4. series
5. short answer

Question display directly power point on the screen. Which interact with installed device and receiving device . Instructor can also ask question orally. Student join and login use of session with student ID.



Figure 3.1: Class-room Response System [2]

3.3 Drawback of Clickers

It will take installation charge or maintenance cost.

- Now a days clickers system using communicate through SMS. so student send his response to the instructor. but SMS is not free service so most of student do not like to send his response so that only who is most intrested student would ask questions
- As clickers generation is in rapid growth, so now a days we are using smartphone,tablet and PDA for make a medium of communicate between student to instructor. but each and every student can not able to keep these kind of device as well as also need wifi-connection each or every device so it may create proble for growth of clickers system.

3.4 Student Response System

Today's student suppose laptop connected with Internet [8]. They invest time in doing extra things like face-book, video game ,text message and you-tube. So student should be actively involve in learning process. So student response student is most effective tools. It will create engaging class-room system environment. Instructor can ask question and collect response in real time and result are quickly available for review. During class instructor correctly analyses and instructor give some suggestion all of them. [9]Class-room response system is compact ,reliable and easily use by student and instructor. It is easy and cost effective to connect to remote class-room of central perspiration. Student Response system people use more then 4 million responses cards organization over the 90 country and 50 percent college and university use in USA.

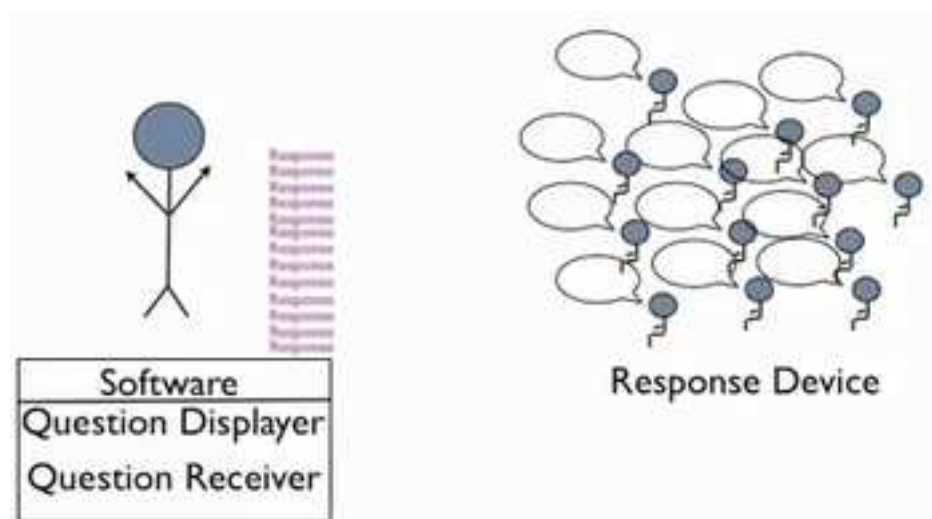


Figure 3.2: Student Response System-1 [9]

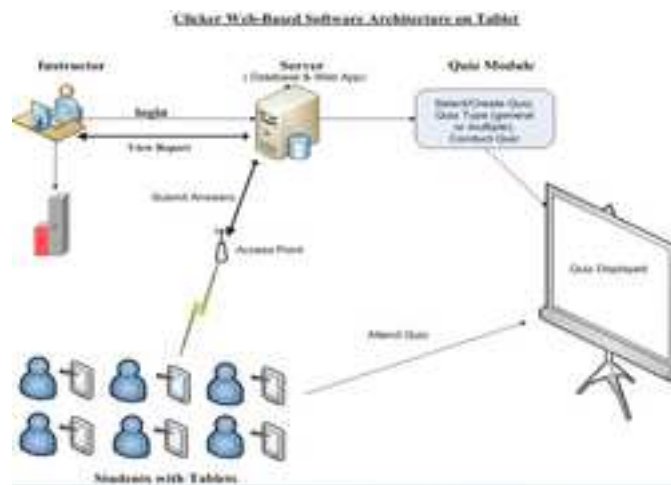


Figure 3.3: Student Response System-2 [9]

Chapter 4

Problem Formulation

4.1 Motivation

The motivation of clicker development was become popular by the advancement in the teaching in the college and university [4]. The main peruse of the clicker system is provide good platform for study and as well as increasing student confidence in their own abilities, because some student can not able to ask questions during class-room, so that active participation can be increased as well as student in class can be increased. The motivation for the project it techniques to provide an effective interface for communicate between student and instructor regarding any doubt or confusion in the project, so that student can do better in his/her project. [6]The clicker system optimization also to provide multiple form of questions which include images, and table as part of programming lectures. As instructor asks same questions during quizzes or exams for all students in large class, there is a chance that student can cheat during exams for getting good grades. So that we can provide efficient interface which can generate different questions paper to different students.

4.2 Problem Statement

Number of clicker device, which is Tablet, Desktop, PDA and Smart-phone. That can be connected to a Wi-Fi AP(Access Point) are limited to maximum 25 to 30 client. so that if we want to make possible for many user able to connect at the same time. we have thought for solving following approach.

1. Exploring the possibility of using multiple wifi access points.
2. Exploring the possibility of using single AP to provide connectivity to many tablets.

4.3 Challenges of clicker system optimization

CRS(classroom response system) has number of challenges in the classroom environment. First, the addition of the requirement that students purchase not only a textbook, but an electronic device to provide responses. the addition

of CRS as an evaluation instrument increases the workload required in grade calculations.

Chapter 5

Observations

The following observations are made through detail literature survey of re-search related to clickers, i.e ARS (Audience Response System), CRS (Classroom Response System), SRS (Student Response System), or PRS (Personal Response System) and mobile lecture instruction.

- Selected questions types play important role in clickers system.
- Various questions submitted by student during the classroom response system.
- we can give response either in group or individual.

CRS can provide students with an active learning environment and immediate feedback [5]. Both of which increase the students ability to accurately complete numerical problems on subsequent exam and quiz assessment instruments, as well as increasing student confidence in their own abilities.

5.1 Problem Solving Approach

we have thought a problem solving approach. Which would help to handle the large number classroom scenario. In these approach avoid to be connected to the access point every time. So that help of this approach. We can be handle large number of STAs with a single access point. STAs is a station. It may be Laptop, A desktop PC, PDA, Tablet and Smart-phone. It approach can be understood well by taking quiz in the exam hall. Because in class-room have large number of student with his/her STAs. As we know that AP(Access point) has limited so that student connect in sequential manner . In this approach first allow any 25 STAs. It maximum limit of AP. After downloading their quiz paper. They will release their Wi-Fi connection. Now another group get connect to AP. They will also release the connection while downloading complete quiz paper. This process will be repeat again and again. Whenever all client complete downloading quiz paper. Help of these approach. Client get download very quickly.

5.2 Components

This approach need four components

1. Server
2. Client
3. AP
4. STAs

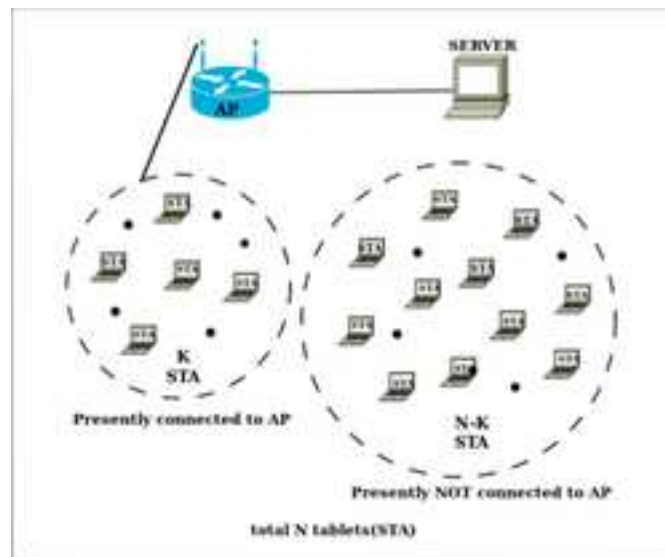


Figure 5.1: Architecture Diagram of proposed model

Server application will run on the server machine. It makes connection with client through wire connection. Server has responsible to keep quiz paper and

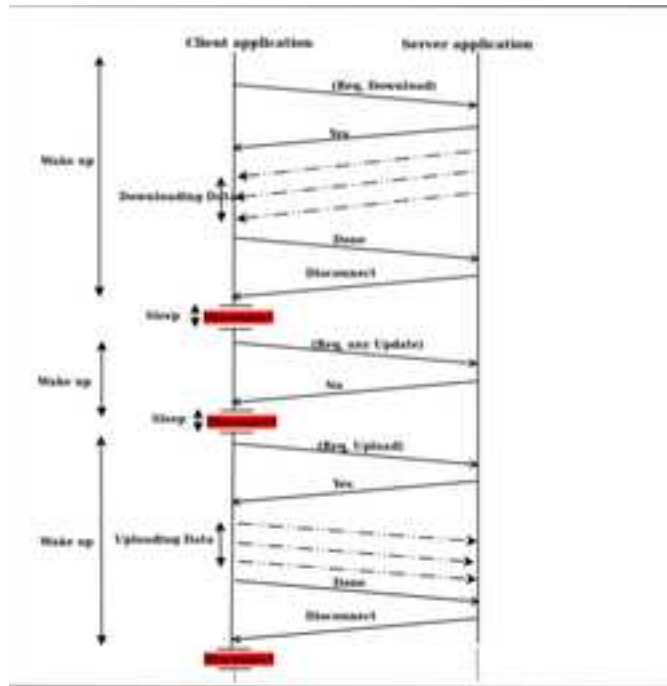


Figure 5.2: Interaction Protocol between Client-Server Application

collect answer sheet. Client application will run on STAs (Station). STAs will be responsible for downloading and uploading data. The client side have two type of mode one is wake-up mode and other sleep mode. When STAs will be sleep mode then application will not perform any activity. It would be fixed interval for wake-up and sleep activity . When client application wake-up. It will send request to server. If server has any response then client will be download. If server has no recent update client disconnect with AP.

Chapter 6

Conclusion

The main objective of our study is to utilize the time gap and to make it reduce cost. So we can improve student learning capacity, when instructor organizes quiz and on-line exam by presenting different contents to different kind of students. As instructor can close the other site as well as the server, cheating possibility will also be reduced. Once the student completes his/her response, the instructor can do the re-setup of server.

6.1 Future Work

Currently IIT Bombay is planning to add some update. Which is wired connection with fourth version clicker system. They are trying to avoid wireless medium and RF (radio frequency). Because in class room so many students are sitting over there. So that they may observe wireless frequency and wireless speed may become weak.

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