Clicker System Optimization

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  - What makes it unique?
  - Downside of clickers

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Learning aid for better understanding of course material

- Clickers use infrared or radio frequency for communication
- Used to test students understanding of concepts
- Allow active participation by all students
- Provide immediate feedback to the instructor and the students
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What makes it unique?
- Regardless of the class size, the instructor is always able to gauge student understanding.
- Results from class responses can be saved and then displayed in a variety of formats.
Downside of clickers

- Cost factor in hardware clickers
- If portable devices likesmart-phones, tablet, or laptops used in a class, surely it reduce cost factor but can cost student deviation from course, if WiFi is available all the time
- If SMS based response system is used, then cost factor comes between learning
Clickers now a day’s

- Integrated with portable devices
  - Mobile-based
  - Tablet/laptop based
- Device free Classroom Response System
  - Based on Fiducial Markers
  - Technology used computer vision
- Web-based Classroom Response System
  - AakashClicker
  - Message-Grid
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CLICKER 2009A, Ver 1
- In 2009 the first clicker system which was developed at IITB based on hand-held device
- Drawback: cost factor

Clickers in distance education for a multiple classroom environment
- Divya Tiwari et al. (2010), IITB, describe a synchronous, distributed approach for CRS
- It involves a central server and a multiple remote server
- It uses XML file, which contains the responses of students from remote server
- The responses collected are then transferred back to the central server using FTP
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AakashClicker provide a web based interface for active learning

Different modules in AakashClicker

- Admin: Provide facilities to admin for adding, editing, fetching and deleting the information
- Raise Hand: Provide facility to ask questions or doubt
- Polling: Used to conduct questionnaire
- Question Bank: Provide the facility of adding and searching a questions for conducting exams or quizzes
- Create Quiz: Provide the facility of creating quiz by fetching questions from Question Bank
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General Constraints or Limitations in AakashClicker
- Lack in vocabulary of scientific symbols
- It requires an Internet browser to fetch Clicker Web Application through URL
- Works best in latest version of Mozilla Firefox and Google Chrome
- Used for real time response
Observations

- Type of response, either group or individual, or both affects active learning.
- Selection of question type play an important role in clicker system.
- Pedagogical Theory or Implementation Studies affects the type of learning.
- Audience-paced and peer instruction can have a greater impact on learning outcomes.
- Before class discussion can improve positive responses by students.
The main focus of clicker system is to provide an interface for communication between students and instructor more efficiently.
Can we provide an interface, which can generate different content to different students?

- Can we enhance current Clicker System, so that active learning can be improved?
- Can time gap between early response and late response can be utilized?
- Can clicker support large class?
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Can clicker support large class
How can we solve the problem of time gap utilization, when one student solve quiz early and other not?

Possible using Solve and Evaluate

In this approach student, who solved question early can evaluate answers of other students

Matthias Hauswirth et al. (2009) describe solve and evaluate approach
Problem Statement and Proposal

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- How can we add functionality of generating different content to different kind of students?
- Possible, by developing clicker application over XoWiki content flow (Neumann, 2008) package
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Possible, by developing clicker application over XoWiki content flow (Neumann, 2008) package
How can we solve the problem of connection failure in large class, when all students start log-in at the same time?

- When only single access point is used, then managing WiFi connection is big hurdle.
- When multiple access point are used, then problem of load balancing is big hurdle.
  - Distributed load balancing by hiding SSID.
  - Load balancing approach based on deadline miss ratio (DMR).
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Conclusion

- The overall study circumnavigate around the use of clicker effectively. Our solution based on three main factors:
  - Utilizing the time gap can improve student learning.
  - By presenting different content to different kinds of students can surely prevent students from cheating during exams or quizzes.
  - It is possible to block the other sites or shut down the server.
  - It is possible to provide better load balancing algorithm for managing multiple access points.
Future Work

- We can provide an interface for asking and producing programming language questions in class, like syntax, or coding.
- Tutorials can be integrated into the application where in the student can browse through the subject whenever required.
- We can provide recommendation system for enhancing learning capabilities of a learner.
As we gaze out at the sea of slouching bodies and expressionless faces, it is hard to resist wondering if students want less education and more entertainment.
Questions?