Abstract Summary and References of Research Papers Relevant to Clicker System Optimization

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1 Abstract of Research Papers Related to CRS, ARS and Clickers

1. Solve and Evaluate with Informa: A Java based Classroom Response System for Teaching Java
   - This paper describes the use of software clickers, implemented in java, that support richer problem types other then only multiple choice.[12]
   - Keywords: Collaborative learning, Classroom clickers

2. Reducing Lecture and Increasing Student Activity in Large Computer Science Courses
   - This paper describes a web-based tool called MessageGrid for peer-learning, MessageGrid helps student in engaging lexes (small exercises). They present four different way of designing lexes.[32]
   - Keywords: Courseware, Multimedia, Classroom management, CS Education Research, Pedagogy

3. The influence of personal Response Systems on students perceived learning outcomes and course satisfaction
   - This research is related to a survey seeking students’ opinions regarding their clicker use.[41]

4. Browser-based mobile clickers: Implementation and Challenges
   - In this paper, we describe about the use of mobile clicker for use in large classes or distributed classes for scalability. For improving interaction between teacher and students.[4]
   - Keywords: Mobile learning, classroom response system, activation, student feedback, mobile clicker.
5. uRespond: A Classroom Response System on the iPad

- We developed a mobile application called uRespond to overcome the limiting types of questions of traditional clicker systems by allowing for free-form student input such as drawing, graphing, calculation, or structure creation and manipulation. [13]


- We developed a Mobile Participation System (MPS) a response system that use mobile as communication between teacher and students for effective learning. [28]

7. OpenIRS-UCM: An Open-Source Multi-platform for Interactive Response Systems

- We have developed OpenIRS-UCM: an open source software, it allows the development of new functions by anybody. It enables the coexistence of several commercial clickers simultaneously with smart-phones, tablets or other modern electronic devices. [10]
- Keywords: Free student response systems, multi-clickers, educational technology, virtual polling

8. Success and Failure of Audience Response Systems in the Classroom

- Williams college moved from an infrared system to a radio system that was more portable. The primary functionality of the system is to collect and present live data collected in the classroom. In its simplest form, faculty could use the system to review student comprehension of content. [31]
- Keywords: Clickers, Personal Response System, Audience Response System, PRS, Turning Technologies, TurningPoint. PowerPoint, Classroom, Educational Technology

9. Device-Free Personal Response System based on Fiducial Markers

- We propose a method of collecting student responses by means of printed fiducial markers and tracking technology based on computer vision. Students can submit a response by holding up their marker sheets. Teachers can continuously track and record the responses using personal IDs in real time. [30]
- Keywords: student response system; clicker; visual tag; 2D matrix code

10. Low-cost Audience Polling Using Computer Vision
• We propose a new, low-cost technique that utilizes computer vision for real-time polling of a classroom. Our approach allows teachers to ask a multiple-choice question. Students respond by holding up a qCard: a sheet of paper that contains a printed code, similar to a QR code, encoding their student IDs. Students indicate their answers (A, B, C or D) by holding the card in one of four orientations. Using a laptop and an off-the-shelf webcam, our software automatically recognizes and aggregates the students’ responses and displays them to the teacher.[7]

• Keywords: Education; audience polling; low-cost; electronic response system; clickers; ICT4D

11. Tablets as Disruptive Interactive Learning Innovation in Teaching and Learning Environment

• This paper presents the use of SRS by using tablets. How clicker and tablet use differ in teaching environment.[44]

12. Developing electronic classroom response apps for a wide variety of mobile devices – Lessons learned from the PINGO Project

• We develop a web-based application for Classroom Response System.[37]

• Keywords: classroom response systems, mobile development, lessons learned, development issues, platform independence, peer instruction

13. Facilitating Code-Writing in PI Classes

• We present the Python Classroom Response System, a web-based tool that enables code-writing and multiple choice questions in a classroom. The system also allows an instructor to pull specific submissions into an editor and visualizer for use as in-class examples.[52]

• Keywords: CS1, pair programming, peer investigation, active learning

14. Things are Clicking in Computer Science Courses

• This paper presents and discusses a modified approach to teaching an algorithms and data structures course by using a web application called MessageGrid.[33]

• Keywords: Peer-instruction, collaborative learning, assessment, laptop course

15. Exploring the Potential of Mobile Phones for Active Learning in the Classroom
• This paper presents the design and use of a mobile phone extension, which allows students to submit solutions to learning exercises in the form of text or photo messages. [24]

Keywords: Educational technology, active learning, modality, cell phone, mobile phone

16. Effective Learn-Quiz Generation for Handheld Devices
• We present a system that enables users to generate quizzes for mobile devices. [14]

Keywords: Mobile learning, learn-quizzes, Apple iPod, multiple choice tests

• In this paper, we describe the use of clickers for teaching java. [38]

Keywords: CS1, peer instruction, clickers, PRS, classroom response, active learning

18. Interactive Lectures Using Quick Response Codes
• This paper will describe an ongoing project to encourage student interaction during lectures through the use of quick response (QR) codes and Google forms to generate rapid response polls and quizzes. [21]

Keywords: QR Codes, Student Interaction, Feedback, Reflection

19. ASQ: Interactive Web Presentations for Hybrid MOOCs
• ASQ is a Web application for creating and delivering interactive HTML5 presentations for better interaction between teacher and students. [46]

Keywords: HTML5, Software clicker, impress.js

20. Peer Instruction in Computing: the Role of Reading Quizzes
• In this paper, our focus is the reading quizzes by students and ask queries for difficulties or confusion with course material. [51]

Keywords: CS1; peer instruction; clickers; classroom response; active learning

21. BrainGame: A Web-Based Student Response System
• We developed BrainGame as a web-based tool for Classroom Response System. By using existing student computers, the educational wireless network, and a cloud-based backend server and database. [42]
22. Displaying Mobile Feedback during a Presentation

- In this paper, we describe a smartphone interface for real-time mobile feedback during active classes. This feedback is then aggregated and reflected back to the group via a projected visualization, with notifications provided to the presenter and the audience on interesting feedback events. [13]
- Keywords: Mobile, meetings, feedback, presentations.

23. Integrating Diverse Student Devices into the Digital Classroom

- This paper describes the use of handheld or mobile devices during active class involvement. [35]

24. Classroom Questioning with Immediate Electronic Response: Do Clickers Improve Learning

- This research is focused on the difference in learning outcomes between traditional classrooms and classrooms using clickers. [39]
- Keywords: Clickers, Digital Classroom Technologies, Immediate Response Systems, Learning Outcomes, Operations Management, and Questioning.

25. Use of Classroom Response Systems in Numerically Intensive Courses

- This paper will present the methods used to develop the CRS evaluation instruments. These methods will include numerical problem decomposition into steps which can utilize CRS, presentation of a numerical problem in a manner conducive to the use of CRS, use of CRS in identifying the appropriate equation for a problem, and generation of numerical problem responses which allow for student errors in the classroom environment. [8]

26. Optimizing the Use of Personal Response Devices (Clickers) in Large-Enrollment Introductory Courses

- In this paper, we describe the use of clickers in large-enrollment classes. [48]

27. Developing an Improved, Web-Based Classroom Response System with Web Services

- The purpose of this project was to develop an innovative web-based CRS using web services. We added a set of out-of-class learning tools for students as well as an in-class tool called the Confusion Meter to enhance student-to-instructor communication. [36]
28. ACP: An Interactive Classroom Response System for Active Learning Environment

• In this paper, we propose a new classroom assessment tool: Active Class Probe (ACP) which can be used in an active and cooperative environment. [20]

• Keywords: Classroom Response System, WLAN, Active Assessment

29. Experience with a Multiple-Choice Audience Response System in an Engineering Classroom

• This paper presents results and observations from using a multiple-choice audience response system (ARS) in class of 60 students. [31]

• Keyboards: Classroom Technology, Active Learning, Assimilation Feedback, Multiple-Choice Assessment

30. Survnvote: A Free Web Based Audience Response System to Support Interactivity in the Classroom

• This paper proposed use of mobile phone and web. Also provide other data formats as graph, PowerPoint, Excel. Survnvote also provides data analysis to the user. Survnvote solved the main problem of traditional ARS which is high cost and need to physically install the receivers in the room. [27]

• Keywords: audience response system; web-based survey; open source system; classroom interactivity


• AuResS, a web-based audience response system. [17]

• Keywords: Classroom Response System, Audience Response System, Classroom Interactivity, Educational Technology, Assessment

32. Web-based Audience Response System Using the Educational Platform Called BeA

• We have created a dedicated Web form for use by students as a remote control device, which can be operated from an electronic device with a Web browser (eg, laptops, tablets or smartphones). [25]

• Keywords: audience response system; formative learning; in-class participation; learning platform; educational technology
33. Work in Progress: Using Mobile Phones to Accomplish an Audience Response System with iGoogle Home Page

- In our previous works we have developed a set of OpenSocial gadgets that can be included in a personal iGoogle page. Our future work is centred in providing an electronic voting system based on gadgets with iGoogle using mobile devices as smartphones and laptops for voting. [26]
- Keywords: Audience Response System; iGoogle; OpenSocial; gadget

34. Interactive question based learning methodology and clickers: Fundamentals of Computer Science course case study

- The article presents a concept of using a clickers software, which can run on a mobile, tablet, PDA or PC. [16]
- Keywords: Audience response systems (ARS), clickers software, interactive lecturing, question based learning

2 Abstract of Research Papers Related to Access Points Optimization and Automated Testing

1. Indoor Access Point Optimization using Differential Evolution

- For solving problem of better utilisation of access points in wireless local area network (WLAN), they used Differential Evolution method an evolutionary technique. [15]
- Keywords: Differential Evolution, Access Point Placement, Wireless LAN

2. A Highly Scalable Bandwidth Estimation of Commercial Hotspot Access Points

- This paper presents a new highly scalable bandwidth estimation technique that is suitable for efficiently estimating the backhaul bandwidth of a large number of APs. This technique has been extensively evaluated via a prototype implementation in an indoor testbed and in the Amazon EC2 platform. [50]

3. Experiences using an Automated Testing and Learning System

- In this paper, we describe our experiences on evaluating available automated testing systems. [3]
- Keywords: automated testing, electronic assignments, evaluation, science, physics
4. Server Interface Descriptions for Automated Testing of JavaScript Web Applications

- In this paper, first, we demonstrate that formal server interface descriptions are useful in automated testing of JavaScript web applications for separating the concerns of the client and the server. Second, to support the construction of server interface descriptions for existing applications, we introduce an effective inference technique that learns communication patterns from sample data. [18]
- Keywords: Web applications, automated testing, interface descriptions

5. Automated Testing with Targeted Event Sequence Generation

- We propose a two-phase technique for automatically finding event sequences that reach a given target line in the application code. The first phase performs concolic execution to build summaries of the individual event handlers of the application. The second phase builds event sequences backward from the target, using the summaries together with a UI model of the application. [19]
- Keywords: Symbolic execution; test generation; mobile applications; Android

6. Scalable and Robust WLAN Connectivity Using Access Point Array

- In this paper we propose to put together an array of off-the-shelf access points, each operating at a different radio frequency, to build a super access point that can both scale up the overall sustained throughput and improve the robustness of WLAN connectivity in the presence of failures and denial-of-service attacks. The key enabling technology for the proposed access point array architecture is a dynamic load balancing mechanism that can adaptively adjust the association between stations and access points so as to distribute the traffic load among the array’s channels. [11]

3 Abstract of Research Papers Related to XML Compressors

1. Querying and Maintaining a Compact XML Storage

- This paper presents a new storage scheme for XML data that supports all navigational operations in near constant time. In addition to supporting efficient queries, the space requirement of
the proposed scheme is within a constant factor of the information theoretic minimum, while insertions and deletions can be performed in near constant time as well. [49]

• Keywords: XML, Compact Storage, Storage Optimization, Query Processing

2. XQueC: Pushing Queries to Compressed XML Data

• This paper explains about the querying compressed XML data using XQueC system. XQueC takes advantage of the XMill principle of compressing separately data and structure for efficiently querying compressed data. XQueC extends a simple algebra for evaluating XML queries to include compression and decompression. [5]

3. Compressing and Searching XML Data Via Two Zips

• We used algorithm called Structuring labeled trees for optimal succinctness, or succinct tree representations to design and implement a compressed index for XML, called XBzipIndex, in which the XML document is maintained in a highly compressed format, and both navigation and searching can be done uncompressing only a tiny fraction of the data. [9]

• Keywords: Labeled trees, XML compression and indexing

4. Supporting Efficient Query Processing on Compressed XML Files

• In this paper, we propose a new XML compression scheme based on the Sequitur compression algorithm. By organizing the compression result as a set of context free grammar rules, the scheme supports efficient processing of XPath queries without decompression. [23]

• Keywords: XML, Query processing, Data compression

5. A Metadata Encoding for Memory-Constrained Devices

• This paper explores the available solutions for storing self-describing information on memory-constrained sensor nodes and presents the design of MoteML. MoteML is a text-based encoding that captures a subset of SensorML in a template-based structure. This text data is then compressed using available text compression techniques. The resulting file is small enough to be stored on a memory-constrained embedded device. [2]

• Keywords: Embedded networks, sensor networks, metadata, SensorML, MoteML

6. XMill: an Efficient Compressor for XML Data
The compressor, called XMill, incorporates and combines existing compressors in order to apply them to heterogeneous XML data: it uses zlib, the library function for gzip, a collection of data type specific compressors for simple data types, and, possibly, user defined compressors for application specific data types.[22]

7. CSC: Supporting Queries on Compressed Cached XML

- We present Compressed Structure Caching (CSC) as a solution that reduces the amount of data exchange by a combination of the following techniques: compression of the XML document’s structure, client-side caching of the structure and of already received XML content, inference and optimized loading of the content needed on the client to answer a given query.[6]
- Keywords: XML, Caching, Compression.

8. XPRESS: A Queriable Compression for XML Data

- In this paper, we propose XPRESS, an XML compressor which supports direct and efficient evaluations of queries on compressed XML data. XPRESS adopts a novel encoding method, called reverse arithmetic encoding, which is intended for encoding label paths of XML data, and applies diverse encoding methods depending on the types of data values.[29]

9. A Comparison of Data Serialization Formats For Optimal Efficiency on a Mobile Platform

- In this paper, we compare four different data serialization formats with an emphasis on serialization speed, data size, and usability. The selected serialization formats include XML, JSON, Thrift, and ProtoBuf. XML and JSON are the most well known text-based data formats, while ProtoBuf and Thrift are relatively new binary serialization formats. These data serialization formats are tested on an Android device using both text-heavy and number-heavy objects.[40]
- Keywords: Android, Dalvik, Data serialization, JSON, ProtoBuf, Thrift, XML

10. XGRIND: A Query-friendly XML Compressor

- In this paper, we propose a new compression tool called XGrind, that directly supports queries in the compressed domain. A special feature of XGrind is that the compressed document retains the structure of the original document, permitting reuse of the standard XML techniques for processing the compressed document.[45]
11. XQPoint: A Queriable Homomorphic XML Compressor

- In this paper we propose a new XML compression technique that obeys the structure of the XML documents and provides the ability to querying the compressed document with both content and structure (CAS) queries type. XML elements and attributes names are encoded by using fixed-point dictionary-based technique. Other XML data are organized into special containers according to their path from the root attribute, and the containers are compressed using the same fixed-point technique. [1]

- Keywords: XML, compression

12. Structural Join Oriented XML Data Compression

- This paper proposes a new Compressor—Structural Join Oriented XML Data Compressor which makes structural join possible by giving all elements and attribute names in document a unique region encoding. This paper also provides a definition of the Same SubTree(SST) and an algorithm of merging the SSTs. An experimental evaluation on the typical XML datasets shows the efficiency of SJXC. [47]

- Keywords: XML; compression; structural join; the Same SubTree

References


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