IEEE

2012

IEEE PCSJ - ACM Aizu Chapter
Joint Technical Meeting

Usability Assessment & Elearning
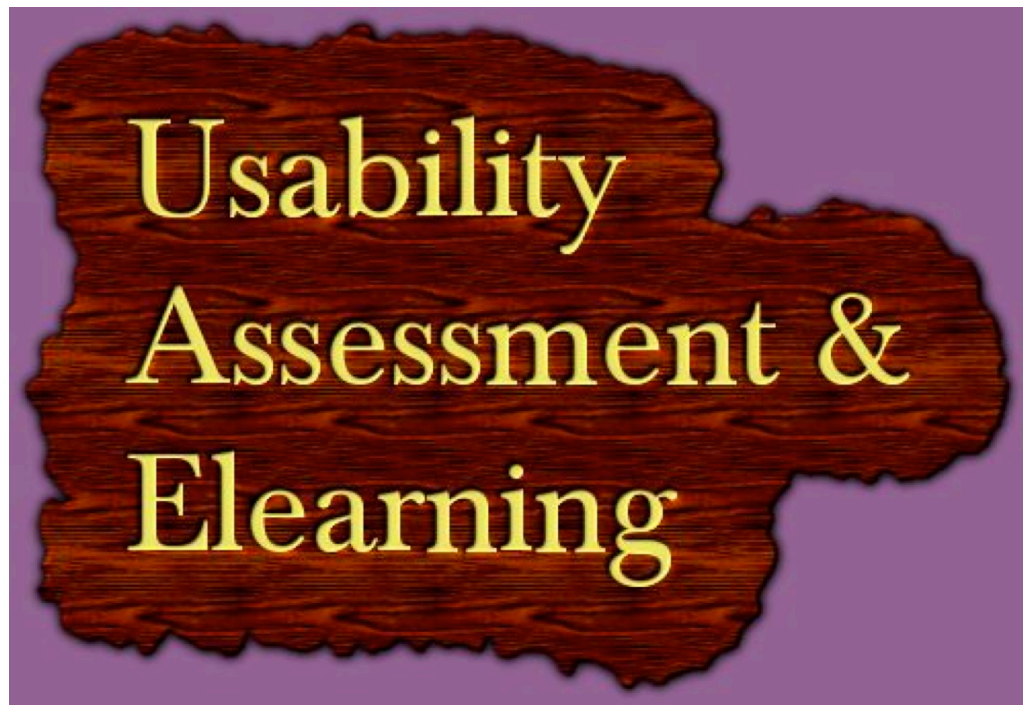
University of Aizu

October 27-28, 2012

IEEE PCS-Japan Chapter Technical Meeting and 4th ACM Chapter on E-learning and Technical Communication Conference

You are cordially invited to the IEEE PCS-Japan Chapter Technical Meeting and 4th ACM Chapter on E-learning and Technical Communication Conference sponsored by the IEEE Professional Communication Society of Japan & the ACM Professional Chapter on ELearning and Technical Communication at the University of Aizu.

Keynote Speakers:

Roger A. Grice, PhD (Rensselaer Polytechnic Institute, New York)

Matt Rolph, PhD Candidate (Rensselaer Polytechnic Institute, New York)

Sponsored by:

IEEE Professional Communication Society of Japan

ACM Professional Chapter on ELearning and Technical Communication

CLR Technical Communication Laboratory, University of Aizu

CLR ELearning and Usability Laboratory, University of Aizu

Advanced System Architectures Group, University of Aizu

Supported by:

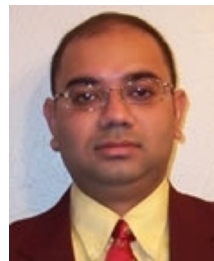Active Knowledge Engineering Laboratory, University of Aizu

Hosted by:

UBIC, University of Aizu

IEEE PCSJ

About the Chapter: The Professional Communication Society - Japan Chapter (PCSJ) is Japan's leading society on scientific, technical, and professional communication practices. The Chapter holds regular technical meetings, workshops, and an annual conference.

Chapter Officers:

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WEBMASTER

Laurence Anthony (Waseda University)

ACM Aizu Chapter on ELearning and Technical Communication

About the Chapter: This chapter is broadly focused on the use of technical documentation and use of communication patterns for e-learning purposes. Much of the research discussions related to this chapter is associated with the use, design and testing of software and other interfaces for e-learning perspectives. Further, research projects in technical documentation emphasize the user-friendly application of text and graphics for commercial products.

CHAIR ABDERAZEK BEN ABDALLAH Senior Associate Professor University of Aizu	
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Conference Theme:

Theme: Writing Assessment, E-Learning and Usability

Assessing Writing is of paramount importance in any writing context. Such assessment might include traditional and standardized forms of testing of writing, alternative performance assessments (such as portfolios), workplace sampling and classroom assessment. Writing assessment focuses on all stages of the writing assessment process, including needs evaluation, assessment creation, implementation, and validation, and test development. The purpose of this conference would be to dwell into all perspectives on writing assessment as process, product and politics. Writing assessment can be used for a variety of appropriate purposes, both inside the classroom and outside: providing assistance to students, awarding a grade, placing students in appropriate courses, allowing them to exit a course or sequence of courses, certifying proficiency, and evaluating programs.

Over time, we have shifted from classroom assessment techniques to e-assessment techniques. Technology today offers many new opportunities for innovation in educational assessment through rich, new and innovative assessment tasks and potentially powerful scoring, reporting and real-time feedback mechanisms. One potential challenge for realizing the benefits of computer-based assessment in both instructional assessment and large scale testing comes in designing questions and tasks with which computers can effectively interface (i.e., for scoring and score reporting purposes) while still gathering meaningful measurement evidence. How do learners perceive such assessment mechanisms or interfaces? Our formal and information discussions during this conference will focus on online assessment options, advantages and disadvantages of online assessment, online discussion and assessment, use of online grade book and so on.

Effective e-learning systems should include sophisticated, innovative and advanced features and functions, yet their interface should hide their complexity, providing an easy and flexible interaction suited to catch students' interest. How do we make the learning experience and assessment smooth and seamless? That is where we start talking about usability. Usability is an important perspective in designing effective e-learning systems and contributes towards the development of a consolidated evaluation methodology for e-learning applications.

October 27, 2012

9:15 – 9:45 – Opening Registration

9:45 – 9:50 – Opening Talk by PCSJ Chair **Debopriyo Roy**

9:50 – 9:55 – Opening Talk by the President of University of Aizu **Shigeaki Tsunoyama**

9:55 – 10:00 – Opening Talk by the ACM Chapter Chair **Ben Abdallah**

10:00 – 10:05 – Opening Talk by ACM Chapter Vice-Chair **John Brine**

10:05 – 10:10 – Introducing RPI: Video

10:10 – 11:10 – 1st Keynote Speech by **Matt Rolph**

11:10 – 11:40 – Presentation by **Patricia Cortez**

11:40 – 12:10 – Virtual Presentation from Sri Lanka – **Thilak Chaminda and Thilina Ranbaduge**

12:10 – 1:30 – Lunch at Keyaki

1:40 – 2:40 – 2nd Keynote Speech by **Roger Grice**

2:40 – 3:10 – Presentation by **Toyohiro Kanayama**

3:10 – 3:30 – Coffee and Tea Break

3:30 – 4:00 – Presentation by **Maxim Mozgovoy**

4:00 – 4:30 – Presentation by **Tatsuki Kawaguchi**

4:30 – 5:00 – Presentation by **William Rozycki**

5:00 – 5:30 – Presentation by **Laurence Anthony**

5:30 – 6:00 – IEEE PCSJ Meeting

6:00 - 7:30 – Informal Dinner (Venue to be decided)

October 28, 2012

10:00 – 11:00 – 2nd Keynote Speech by **Roger Grice**

11:00 – 12:00 – 2nd Keynote Speech by **Matt Rolph**

12:00 – 1:30 – Lunch at Indian Restaurant

1:30 – 5:30 – Bus Tour Around Aizuwakamatsu Area

Abstracts

Speaker: Matt Rolph

The Measured Word: Technological Advances and Human Considerations in Writing Assessment.

Teaching writing is a grading intensive process, one that is challenging whether we rely on individual human evaluators, groups, or on machines. Decades of research in human judgment and decision-making demonstrate that we are not always at our best, or as consistent as we may wish to believe. An individual's performance will vary. A coordinated team assessment effort relies on group expectations and consensus building that can obscure what we wish to measure. Machines are usually consistent, but face different challenges despite the continual improvement of automated grading systems. Recent studies (like the 2011 ETS-NJIT E-Rater study) demonstrate that software is capable of performing on par with human graders evaluating freshman writing placement samples; critics point out these are short and time-limited writing samples and the humans evaluating them use machine-like heuristic grading criteria. To better understand what problems remain to be solved, we will examine a small number of approaches, best practices in writing assessment by individuals, groups, and machines. Each approach offers partial answers to the questions of what makes writing good or communication effective, what distinguishes human writing from machine-prepared text, how such qualities and characteristics can be measured, and why these questions should be important to communicators, evaluators, teachers, and students.

The Least Usable Button: Applications of Cognitive Load Theory in User Interface Design.

Cognitive load theory considers the limits on human working memory and related ramifications for information processing and executive function. Considering cognitive load may be helpful when designing useful, usable interfaces. The designer's logical impulse is often to make everything easy, i.e. make every button as easy as possible to push, keeping the cognitive load associated with every element, item, or task as low as possible. An alternative involves managing the cognitive load, designing certain 'buttons' that are more difficult to 'push' in order to meet usability objectives outlined by Nielsen, Norman, and other contemporary usability experts.

Speaker: Roger Grice

Electronic Learning: Modes of Instruction and Models for Learning

When we hear the term "Electronic Learning," a number of images may form in our heads. We may think of a student working in isolation typing responses to questions and answering questions with little, if any, interaction with others in the learning environment. Or, we may think of groups of students actively engaged in lectures, discussions, and activities, working closely with others—both synchronously or asynchronously—having a rich and rewarding learning experience.
The forms of electronic learning experiences depend on the resources and technology available. But they also depend to a very large extent to the learning model used to present information and to engage students.
In this session we will talk about the range of "electronic learning spaces" available and study a number of learning models that lead active and effective learning.

The Evolution of Information and Interface Usability: from Simply Effective to Effective and Engaging

Much of the early work done in the field of information and interface usability focused on helping people perform their tasks easily, efficiently, and correctly. Procedures and measures were developed to ensure that people were able to accomplish their task-oriented goals in as short a time as practical while ensuring the completeness and correctness of their results.
Today, however, we have a different relationship with our computing facilities. Our computers do not stand apart from us—in computer rooms or on desktops—they are with us during much of our waking hours—as laptops, tablets, or smart phones. As our opportunities physical interaction have evolved, so too have our expectations for their use and our understanding of usability. No longer is it the case that we want to perform quick, isolated activities and be done; we are frequently engaged in ongoing activities, and our involvement is less structured and more in tune with the rest of our activities. The goal of many social media applications is to have users constantly engaged with the social media sites and the services they offer.
This evolving relationship with media implies an evolving, and expanding, understanding of "usability." In this session we will explore some of the new understandings of usability and ways that we can assess the usability of interfaces and products that we work with.

Speaker: Patricia Cortez

Exploring the Wikipedia Miner API and Glosses for Language Learning Support

The use of Glossing technique can promote the likelihood of acquiring words incidentally as a by-product of reading, having a positive effect on vocabulary learning and assisting reading comprehension tasks. In this research we are focusing on designing a WikiGloss tool that is an application intended to provide support for the extensive reading task of English-as-a-second-language by using the glossing technique. WikiGloss parses a given document identifying the main topics and linking them to their corresponding articles or short definitions. To implement this parsing and extract articles definitions we use the Wikipedia due to the vast range of topics and content that it provides. The Wikipedia Miner is the embedded Open Source API that is used by the WikiGloss tool calling corresponding functions. The presented tool provides three main features: *text wikification*, *word translation*, and *practice activities management*. The typical working scenario can be considered as a sequence of following steps. Initially, the user inputs the text of a given document; the text will be parsed to identify which terms have corresponding articles in Wikipedia and which of them are worthy for a link according to the topic or context given by the surrounding text. The relevant articles are presented as hypertext links and a brief definition of the word will be displayed on the mouse over event. The parsed links can have available the translation of the words to a required language if is available in Wikipedia, as well as a set of practice activities to test the comprehension of the document.

Speaker: Toyohiro Kanayama

Usability Testing with Eye Tracking for Smartphones

Smartphones and other mobile devices are becoming increasingly ubiquitous in our daily lives; therefore it is essential to ensure good usability testing. This presentation will describe good design techniques and evaluative methods using Tobii Technology`s pioneering eye-tracking technology for smartphones. The technology keeps track of the fine gaze movements which are characteristic of smartphone users, making it possible to realize usability test services and thus enabling developers to simulate users' cognitive characteristics and thinking with a high degree of precision.
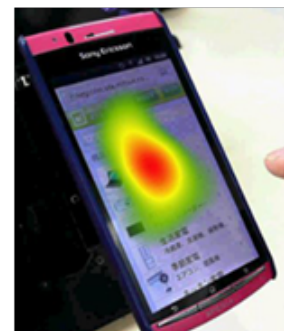
Speaker: Thilina Ranbaduge, Thilak Chaminda

Evaluating Outliers in Student Performances Through Online Activities in Distance Learning Environments

Use of e-learning systems has transformed the way of gathering knowledge where a large amount of knowledge is been transferred and generated by the interactions among its stakeholders. For improving the way of learning and to increase the capacity of learning in students, it is becoming a vital factor to analyze the online activities in a much deeper manner to understand the dynamic nature of accessing and the way these interactions are occurring. This paper reports on an analysis of online activities of undergraduate students, who are studying in an open and distance mode in an e-learning environment. In this research we analyze their behavior to study, how it has been affected their overall academic performance. In order to perform that, for a selected group of students, the Moodle activity logs and the final grades are collected for a set of course modules in a degree program. Several data pre-processing steps are applied on the dataset and it is clustered using the Density Based Scan algorithm. Selected data set gives three clear clusters and 211 data points as outliers in the dataset, which are provided as the un-clustered instances. The outcome of this study shows that, the activity logs in e-learning environment is useful for understanding outliers in student performances and how these user activities are related to the academic achievements.

Speaker: Maxim Mozgovoy

Towards Word Bricks — a Virtual Language Lab for Computer-Assisted Language Learning

The use of computer-assisted language learning (CALL) instruments is now widespread and well perceived both by language teachers and language learners. However, popular CALL systems still rarely incorporate modern achievements of natural language processing technologies. According to the recent review of PC Magazine, advanced CALL systems provide the following capabilities: lessons with multimedia content, word-based memory games, online tutoring, and pronunciation training. Still, these technologies rarely address one of the major flaws of today's CALL systems, lying in their strictly limited interactivity. Typically a student accesses learning materials in the same way as in case of traditional books and audiotapes, while having little or no ways to experiment with language. One can note a contrast between CALL instruments and educational software, available for natural sciences, such as physics or chemistry. For these subjects, in addition to browsing multimedia-learning materials, a student can often perform numerous experiments in a "virtual lab". Similar idea of a "virtual language lab" based on established natural language processing technologies is the starting point of a project recently initiated at our institution. In this talk, I will introduce this project, and discuss its expected advantages and drawbacks as well as possible research directions. The first version of our software will be English language-based, but I will also use examples from other languages to illustrate certain grammatical phenomena.

Speaker: Tatsuki Kawaguchi

Promoting and Revitalizing Study Abroad Programs in Japan After the 311 Great Tohoku Earthquake

Observation of the current Fukushima circumstance from a global perspective is expected to contribute removing the negative impression of Fukushima after the 311 earthquakes and nuclear disaster. In this session, successful case study is documented, and important lessons are recorded thus other IEEE PCSJ-ACM members can learn from these activities for the establishment or improvement of their own.

Speaker: Laurence Anthony

Designing Software for Multi-Platform, Multi-Lingual Audiences: The Case of AntConc

Electronic communication is increasingly being carried out on various devices from desktop computers, notebooks, and netbooks, to tablets and smartphones. Often a specific device is tied to a particular operating system, such as Windows, Windows Mobile, Linux, Android, Macintosh OS, or iOS. As a result, developers are increasingly required to design software that works across many of these platforms. In addition, globalization has resulted in the need for software to be able to smoothly handle content delivered in multiple languages and displayed through a multi-lingual interface. If a software tool is designed from the outset to adapt to a specific country or region, the impact of the software across country boundaries can be hugely increased.

In this presentation, I will discuss some of the practical problems associated with developing software for multi-platform, multi-lingual audiences. Using my own tool, *AntConc*, as an example, I will discuss issues including the choice of programming language, ways of dealing with character encoding issues, interface design strategies, and localization techniques. Although the talk will focus on software development, it should be of interest to anyone who uses computers for any kind of language processing, including language teachers, corpus linguists, and regular visitors to Internet sites.

Speaker: William Rozycki

Changes in English as a lingua franca for engineering

Results from a discourse analysis of engineering research articles by non-native speakers of English (NNSE) is presented. A corpus of 14 *IEEE Transactions* Best Paper award-winners was created and analyzed for non-canonical grammar occurrences. Findings indicate the presence of patterns of non-canonical grammar use that were shared, though not uniformly, by non-native speakers of English (NNSEs) from different first language (L1) backgrounds. The patterns accord with some of the features of NNSE spoken language identified by Seidelhofer 2004. That the most prestigious journals in engineering award Best Papers to NNSE writers who use considerable amounts of non-canonical grammar indicates that the 'gatekeeping' function of reviewers and editors (Burrough-Boenisch 2003, Belcher 2007) is no longer the provenance of native speakers only, at least for the field of engineering. The findings from this research indicate that teachers who prepare students to produce written engineering English for publication will do well to concentrate on teaching meta-discoursal language, formatting, and structure, while spending less or no time on the errors (e.g. article omission and discord of subject-verb number marking) identified as common in the Best Paper corpus.

About the Presenters

Roger Grice is a Clinical Professor of Technical Communication and Interface Design at Rensselaer Polytechnic Institute. He received his BS in Electrical Engineering at the Polytechnic Institute of Brooklyn, MS in Computer Science at Union College, and PhD in Communication and Rhetoric at Rensselaer Polytechnic Institute.

Roger Grice was employed at IBM Corporation from 1964-1992, achieving the title of Advisory Information Developer Responsibilities. He later became involved with Roger Grice Associates from 1992-1994. From 1994-1996 he worked for Sykes Enterprises, Inc. Roger returned to Roger Grice Associates, Inc. from 1994-1997. He has been involved with Rensselaer Polytechnic Institute from 1984-present.

Matt Rolph is a PhD Candidate in Communication and Rhetoric at Rensselaer Polytechnic Institute. His thesis is titled "This is not a test: Communication, Usability, and Gamification in the near future of standardized assessment", and focused on assessment designs for writing and critical thinking. He holds a BA in English Literature (2000) and an M.Ed. in English Education: Teaching of Writing (2004) from Plymouth State University, where he also served as coordinator for the College of University Studies, an advising program for first year students without declared courses of study, associate director of the Medieval and Renaissance Forum, technical liaison for the New Hampshire chapter of the National Writing Project, lecturer in Interdisciplinary Studies, and instructor for Composition, Introduction to Literature, Technical Writing, and the First Year Seminar in Critical Thinking and the Nature of Inquiry.

Maxim Mozgovoy is an associate professor at the University of Aizu (Japan), where he studies practical game-oriented observation-based AI systems. The main purpose of his research is to demonstrate the advantages of machine learning and case-based reasoning over traditional approaches to game AI development that often requires enormous handwork. His other research interests are focused around natural language processing technologies. In particular, he is currently working on a "virtual language lab" that will combine natural language processing algorithms with a computer-assisted language-learning environment. Maxim Mozgovoy is also an author of several books on programming and computer science.

Ruth Patricia Cortez is a PhD student of Computer Science at the University of Aizu. Her research interests are in Computer and Mobile Assisted Language Learning Processes, Interface Design, Service Oriented Architecture and Semantic Web. She is actively involved in research on these fields and has published papers in International Conferences. She earned her M.S. from the University of Aizu and has previous industry experience. The focus of her research is on developing a platform for e-Learning services integration.

Tatsuki Kawaguchi has been working as a research associate in the Center for Strategy of International Programs at University of Aizu since January 2009. He has taken a role to fulfill the responsibilities of international affairs, and international student support and services. His MA in TESOL comes from Portland State University. He has also conducted various qualitative and quantitative research on the dialect in southern Kyushu area in Japan, and management system for enhancing international student satisfaction. His research interests focus on designing and integrating the study abroad programs with the aim of developing effective educational activities and intercultural approach, and successful preparation that benefits professional training and development of global engineers.

Thilina Ranbaduge received his Bachelors special degree in Information Technology from Faculty of Information Technology, University of Moratuwa, SriLanka in 2009. At present he is working as a Lecturer (Probationary) at Department of Information Technology in University of Moratuwa, SriLanka and as an Examiner at Center for Open and Distance Learning in University of Moratuwa, SriLanka. His research interests include in the area of Educational Data Mining, E-Learning, Social Networking and Human Computer Interaction. Before an academic career, Thilina worked in software development and engineering field for more than 2 years.

Thilak Chaminda received his B.Sc. degree in Information Technology from the Faculty of Information Technology of the University of Moratuwa, Sri Lanka in 2006 and the M.Sc. degree from the University of Aizu, Japan in 2009. He got his Ph.D. from the University of Aizu, Japan in 2012. He has worked as a software Engineer in several International Software development firms in Sri Lanka, India and Japan. Presently he is working as a lecturer at the Faculty of Information Technology, University of Moratuwa, Sri Lanka. He works on smart systems, e-Learning, human activity recognition and emotion recognition research areas.

William Rozycki serves as professor and director of the Center for Language Research at the University of Aizu. He received his M.A. and Ph.D. from Indiana University. His two main research areas are English for Medical, Science, Engineering, and Technology (MEST) purposes, and Intercultural Rhetoric, a field which studies how culture affects discourse production.

Laurence Anthony is Professor of Educational Technology and Applied Linguistics at the Faculty of Science and Engineering, Waseda University, Japan. He has a BSc degree (Mathematical Physics) from the University of Manchester, UK, and MA (TESL/TEFL) and PhD (Applied Linguistics) degrees from the University of Birmingham, UK. He is a former director and current technical English program coordinator at the Center for English Language Education (CELESE), Waseda University. He is the developer of several corpus tools including *AntConc*, *AntWordProfiler*, and *AntMover*.

ABOUT UNIVERSITY OF AIZU

The University of Aizu is located in Aizu-Wakamatsu City in Fukushima Prefecture. It has a total of about 1,200 students enrolled in its undergraduate and graduate programs. The University of Aizu is dedicated to Computer Science education, both hardware and software, at the undergraduate and postgraduate levels. The university is known for its open access to computers. In addition to its emphasis on information technology, approximately 40% of all professors come from overseas, including countries such as China, Russia, and the United States. The university is officially bilingual and all official meetings and correspondence are interpreted and translated into Japanese and English.

English language education is an important aspect of the University of Aizu. Not only do students enroll in English courses throughout their undergraduate programs, many of their computer science courses are also taught in English. Students are required to write a graduation thesis in English. The University has research ties with many universities overseas, has international staff, and accepts undergraduate and graduate students from abroad.

University of Aizu campus

Campus Map