



Introduction

*By Matthew Bolton and Ellen Bass
Systems and Information Engineering
University of Virginia*

Welcome to another issue of Cognitia. Thank you to everyone who contributed to this newsletter.

We would like to thank everybody for their participation in the CEDM program at the 48th annual HFES meeting in New Orleans. An account of the meeting and a look ahead to the conference in Orlando can be found on page 8. In addition, you will find details about the student paper competition on page 9. Congratulations to the student paper competition winners: Louise J. Rasmussen, Olivier St-Cyr, Janeen A. Kochan, and Eyal G. Breiter.

As you will see, several universities, not for profit institutions, and companies have provided insight into their research and projects. In addition you will find information about past and future conferences of interest to the technical group.

Contributors

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Please direct questions, comments, suggestions, and/or submissions to the newsletter editor, Ellen Bass at ellenbass@virginia.edu.

Visit the CEDM website at: <http://cedm.hfes.org>



Research at Universities and Not for Profit Institutions

*Introduction by Matthew Bolton and Ellen Bass
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In an effort to provide higher visibility for research programs at universities and other not for profit institutions, members are encouraged to submit abstracts regarding their current work. This effort was started in the hopes that it would foster interest in CEDM-related education opportunities and encourage collaboration.

If you would like your research program to be documented in a future newsletter, please send information to Ellen Bass at ellenbass@virginia.edu. Suggestions for other feature sections are also welcome.

The Cognitive Engineering Research Institute Mesa, AZ

*By Jennifer Winner, Leah Rowe, and Nancy J. Cooke
Cognitive Engineering Research Institute*

The Cognitive Engineering Research Institute (CERI) solves problems in distributed sociotechnical systems with an emphasis on the cognitive aspects of the system. CERI strives to bridge the gap between research and technological development. CERI is an independent not-for-profit organization based in Mesa, Arizona, which brings together professionals from private, academic, and government sectors. The Air Force Research Laboratory, Williams Gateway Airport, L3 Communications, and US Positioning have partnered with CERI to conduct applied research pertinent to emergency management, communication analysis, and Unmanned Aerial Vehicles. An agreement is also underway between CERI and Arizona State University. On May 25-26, 2005 CERI will host the second annual Human Factors of UAVs workshop at the Arizona Golf Resort in Mesa, AZ. The event sponsors include the Army Research Laboratory, the Air Force Research Lab, the Air Force Office of Scientific Research, and the Federal Aviation Administration. This annual workshop unites the human factors research community with the Unmanned Aerial Vehicles operations and development communities.

CERI, which was incorporated in October of 2003, has recently moved to a new facility at 5810 S. Sossaman

Road in Mesa, AZ. CERI works closely with the Applied Psychology program at Arizona State University, and is proud to house their CERTT (Cognitive Engineering Research on Team Tasks) Lab (<http://www.certt.com>). To learn more about CERI's current projects, including details regarding the upcoming UAV workshop, visit our website at www.cerici.org.

University of Chicago Cognitive Technologies Laboratory Chicago, IL

*By Christopher Nemeth
Cognitive Technologies Laboratory
University of Chicago*

The Cognitive technologies Laboratory (CtL) in the University of Chicago's Department of Anesthesia and Critical Care has studied cognition and work to improve safety since 1995. Cognitive technologies are the scientific methods and material that are either intended to aid human cognition or achieve their effects by influencing human cognition.

Under Dr. Richard Cook's direction, the Lab conducts laboratory and field studies of behavior and healthcare to explore the impact of technology on human performance. Recent work includes:

- A multi-year examination of infusion devices
- Study of individual and group technical work using cognitive artifacts
- The evaluation of probabilistic risk assessment in whole organ transplants
- Review of adverse event investigation, analysis and reporting
- Research studies of conversation among healthcare providers

For more information related to cognition and patient safety, visit the Lab web site <<http://www.ctlab.org>>.

University of Illinois Human Factors Division Urbana-Champaign, IL

*By Alex Kirlik
Human Factors Division, Psychology, Industrial
Engineering, and the Beckman Institute (HCI)
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The Human Factors Division at Illinois (www.humanfactors.uiuc.edu) has recently experienced rapid growth with the addition of a new M.S. degree in Human Factors and an expansion to 13 affiliated faculty



members. An interdisciplinary Ph.D. program is also available in conjunction with other participating departments and the HCI group at the Beckman Institute (www.beckman.uiuc.edu). Faculty backgrounds span psychology, computer science, information science, industrial engineering and aerospace engineering.

Key research facilities include an airport with over 25 flight instructors and 25 GA aircraft, Glass cockpit aircraft and Saturn driving simulators with full visual support, a Boeing 737 full-motion simulator, an Uninhabited Aerial Vehicle (UAV) simulator, an ATC simulator, industrial grade process control and automation simulators, along with extensive eye tracking and computational resources.

CEDM-oriented research projects include studies of communication in health care and aviation, sociotechnical system safety, display design, training, leadership, information technology to promote social interaction, human-automation interaction in process control and aviation, computational cognitive modeling, human performance modeling, judgment and decision making in context, knowledge-based systems, decision aids, alerting and warning systems, and formal approaches for system safety analysis and verification.

University of Michigan Center for Ergonomics Ann Arbor, MI

*By Nadine Sarter and Yili Liu
Department of Industrial and Operations Engineering
University of Michigan*

The University of Michigan Center for Ergonomics is internationally recognized as a leader in the fields of Human Factors/Ergonomics and System Safety. The Center is affiliated with the UM Department of Industrial and Operations Engineering. Numerous projects and publications by center investigators in both cognitive and physical ergonomics form the foundation of models and methods for analyzing and supporting cognitive work, principles for the design of human-centered technologies and human-machine interfaces, human cognitive and biomechanical modeling, work-related mechanisms of musculoskeletal disorders, and methodologies for analyzing and designing jobs for control of musculoskeletal disorders.

Students at the University of Michigan have the opportunity to take a wide range of courses on topics related to cognitive ergonomics, not only in the IOE

Department but also in other academic units, such as the School of Information and the Department of Psychology. Research projects in the Center employ both modeling and empirical methods for studying and simulating human interaction with modern technologies. The following sections describe a selection of past, present, and planned research projects in the area of cognitive ergonomics at UM:

Multimodal Support for Synchronous Distributed Communication and Coordination

The goal of this ARL-funded research is to support timely and effective information sharing and common ground among human and machine agents through the distribution of information across multiple media and modalities (including vision, audition, and touch). A framework and guidance is being developed for the integrated use of various modalities in support of functions such as time sharing, synergy, disambiguation, and substitution. This framework addresses the need for context-dependent user- and system-initiated adaptation of multimodal interfaces and modality usage. The application domain for this research is future Army operations.

A Computational Architecture for Multi-task Performance in Human-machine Systems

This computational cognitive modeling research, funded by the National Science Foundation, focuses on developing a unified and computational model of the human perceptual and cognitive system based on queueing networks. The modeling approach integrates theories and methods of mathematical psychology, computational cognitive modeling (procedure/production rule based), operations research, neuroscience, and experimental psychology. The queueing network model has not only mathematical structure and rigor, but also computational power to generate/simulate behavior in real time. For example, it is able to steer a driving simulator in real time, and allows us to visualize the internal information flows inside "the mind" while the "human" performs real world tasks such as driving (a short movie clip of the queueing network model steering a driving simulator can be viewed on

<http://www.personal.engin.umich.edu/~yililiu/cogmode.html>.

Attention and Management of Driver In-vehicle Information Systems

Cars are becoming more similar to airplanes with intelligent transportation systems, called telematic devices, providing a plethora of information to the driver. Research supported by the Federal Highway



Administration and NHTSA aims at determining how drivers understand and prioritize multiple messages, how this interacts with safe driving, and what kind of support systems are necessary to control allocation of function within the vehicle. With existing available telematic devices, a driver can be overloaded when the car is parked! Results show that requiring the driver to process even a small number of simple telematic tasks degrades driving performance. Solutions to this problem, which will get worse as more vehicles are sold with telematic devices, are being relentlessly pursued.

Supporting Task Prioritization and Attention Management Through New Forms of Multimodal Notifications

The goal of this NASA-funded collaborative research project is to develop and evaluate intelligent systems that will support crews of manned space vehicles in managing their attentional resources more effectively. Questions to be answered by this research include how multimodal interface technologies can be used to avoid intrusive or distracting (inter)actions and notifications by autonomous machine agents, and how human experts can be integrated into critical activities without requiring continual monitoring of their highly independent machine “colleagues”.

For more information about the Center for Ergonomics, please visit <http://www.engin.umich.edu/dept/ioe/C4E/> and/or get in touch with Dr. Nadine Sarter (sarter@umich.edu) and Dr. Yili Liu (yililiu@umich.edu).

University of Toronto Cognitive Engineering Laboratory Toronto, Ontario, Canada

*By Greg Jamieson
Mechanical and Industrial Engineering
University of Toronto*

The Cognitive Engineering Laboratory (CEL) is located in the Department of Mechanical and Industrial Engineering at the University of Toronto. CEL was founded in 1992 and conducts basic and applied research on how to introduce information technology into complex work environments so that the prerequisites for an effective feedback control system can be satisfied. Past projects have emphasized applications of the Cognitive Work Analysis and Ecological Interface Design (EID) frameworks to the systematic analysis and design of sociotechnical systems. Recent research has expanded to include risk

management, healthcare applications and human-automation interaction.

Current research in the Cognitive Engineering Lab is addressing:

- Accuracy and compliance in the use of an Emergency Medical Service call-taking protocol
- The effects of sensor noise on control strategies and performance with ecological interfaces
- Designing for trust in automation, with applications to relational database management and process control
- Extending EID to support emergency ambulance dispatching work domains
- Validating EID in nuclear power settings with licensed crews
- Hospital worker attitudes toward medical device use error reporting
- Analyzing the end-to-end process for medication distribution in hospitals from physician’s order through to patient administration

Further detail on CEL can be found at www.mie.utoronto.ca/labs/cel.

Stanford University and VA Palo Alto Health Care System The Patient Safety Center of Innovation Palo Alto, CA

*By Tanja Manser and David Gaba
Department of Anesthesia
Stanford University / Patient Safety Center of
Innovation*

Stanford University and the Patient Safety Center of Innovation at the VA Palo Alto Health Care System (<http://anesthesia.stanford.edu/VASimulator>) are carrying out a study on the structure and process of crew coordination in anesthesia funded by the Swiss National Science Foundation. The goal of this research is to identify specific problems as well as effective strategies of crew coordination in anesthesia, and to develop effective training programs and work procedures. The research has focused so far on the development of an observation system which we use to describe coordination processes in the operating room and in a realistic simulator setting. Data analysis is guided by the question of how anesthesia crews adapt their coordination behaviors to changing task requirements during routine procedures and when confronted with non-routine events.



The lab has also been working on a project involving cognitive aids for the management of anesthetic crises. The goal of this study is to determine the effects of cognitive aid use on the correct and timely execution of critical treatment steps for a specific event – “malignant hyperthermia” – and to improve the design of cognitive aids that are already promulgated for use in these situations.

Company Profiles

Micro Analysis and Design Boulder, CO

By Wendy K. Bloechle

Micro Analysis and Design

Micro Analysis and Design (MA&D) is a Boulder, Colorado company that has provided research, development, and engineering services to the public and private sectors for over 20 years. We provide expertise in the areas of human-systems integration, human factors engineering, simulation and modeling, custom software development, and cognitive and computer science research and development.

MA&D has been changing the way that the systems engineering community integrates human considerations into the design process since 1984. Our perspective - the human as a system component - is both powerful and critical for engineering analysis. Our knowledge of the human component is supported by the wide variety of models and tools that we use to predict human performance as a function of job, environment, and equipment design. This allows the human issues to be studied with a level of engineering rigor consistent with that of the system hardware and software elements. The result is a system where the human is not an afterthought but rather, an integrated component working in concert with the other hardware, software, and human components. This performance-based focus on human-systems integration (HSI) has opened the door to many new opportunities in both basic and applied research.

Our main tool for examining HSI issues is computer simulation and modeling. Our commercial computer simulation product, Micro Saint Sharp, is a task network modeling tool that is being used to simulate and solve problems primarily in military systems, as well as in health care, manufacturing and service systems. In addition to our proven capabilities in task network simulation, we have added a strong corporate capability in cognitive modeling. One of the primary

developers of Adaptive Control of Thought – Rational (ACT-R), the highly regarded tool for modeling cognition, is on our staff.

We are involved in a variety of projects that are moving the cognitive engineering field forward. Specifically, MA&D is the lead partner for the Army Research Laboratory’s Advanced Decision Architectures (ADA) Collaborative Technology Alliance (CTA). This is the U.S. Army’s premier basic research effort to advance the state-of-the-art in cognitive and computer science. The overall goal of this \$116M effort is to place advanced information technologies into Army field use that provide decision makers with the right information in the right form at the right time to maximize situation awareness and, ultimately, to make the best decisions possible. The four technical areas where research is being performed by MA&D and our partners include:

- 1) Cognitive Process Modeling and Measurement
- 2) Analytical Tools for Collaborative Planning and Execution
- 3) User Adaptable Interfaces
- 4) Auto-Adaptive Information Presentation

Some of the work that MA&D is doing in the ADA CTA involves investigating the relationship between display elements and situation understanding, examining issues associated with Human-Robotic interaction, and extending the capabilities and accessibility of powerful cognitive models.

We are particularly proud of our work on the Graph Based Interface Language (GRBIL) tool. This effort, sponsored by the ADA CTA, combines the strengths of traditional task network modeling tools, like the ARL Human Research and Engineering Directorate’s (HRED) Improved Performance Research Integration Tool (IMPRINT) with the fidelity of the cognitive modeling architecture in ACT-R. The combined capability provides an unprecedented tool for predicting the decisions humans will make as they operate software in realistic operational scenarios, and to use the predictions to impact the design of the software interface before it is coded. Most importantly, GRBIL allows the user to evaluate a proposed computer interface by describing it graphically, rather than in complex syntax typically required in modeling tools. With this graphical description, GRBIL automatically generates integrated IMPRINT and ACT-R models that execute together to predict the effectiveness of the interface.

The approach taken in the GRBIL effort is underpinned by the first-principle models of cognition implemented



within the ACT-R architecture. In this respect, our approach differs from Cognitive Systems Engineering where design and evaluation is often predicated on a cognitive task analysis. Although different, we see the two approaches as complementary—predicting how well an interface supports the user is a matter of understanding the interplay of both general constraints on cognition and the expertise a user might possess.

During 2005, we will extend GRBIL by collaborating with ongoing efforts within ARL in Robotics. The outcome of this work will be improved interfaces for Soldiers to interact with unmanned air and ground vehicles.

In addition to the ARL ADA CTA work, we are integrating ACT-R into a High Level Symbolic Representation (HLSR), useful for defining intelligent agents. Ultimately, this will make HLSR a highly usable, practical and efficient way of representing Subject Matter Expert (SME) knowledge in a computational system. HLSR would not be directly executable but instead would be compiled into a number of possible cognitive architectures, including ACT-R and SOAR. The advantage of HLSR over those architectures would be a higher level of abstraction and support for common modeling patterns, while leveraging the unique properties of each architecture such as adaptive pattern-matching, associative memory and learning. An obvious analogy can be made to high-level programming languages that compile down to assembly code, in this case cognitive models. We are supporting Soar Technology in their effort to define the HLSR language, produce compilers that translate HLSR code into cognitive models (most specifically for the ACT-R architecture) and apply HLSR to a sample of typical intelligent agent applications such as CGF agents.

MA&D also has extensive experience applying this research to real systems. We are leading the HSI efforts for a number of real systems from the development of future Navy ships to Future Force Warrior. These are just a few of the exciting programs in Cognitive Science at MA&D. To learn more about MA&D visit our website at www.maad.com or call 303.442.6947.

Quotient Inc. at the National Library of Medicine

Columbia, MD

By Renate Roske-Shelton

Quotient Inc. at the National Library of Medicine

Quotient Inc., [<http://www.quotient-inc.com/>] established in 1999, is a woman owned small business based in Columbia, MD that provides information technology solutions to commercial and government clients alike. Quotient Inc. is a service provider who has assembled “the best and brightest people the industry has to offer” with the goal of delivering the right mix of talent, flexibility, integrity and confidence at the right cost, without degrading the quality of products.

Renate Roske-Shelton, a graduate of the New Mexico State University, Las Cruces Interdisciplinary Cognitive Psychology Ph.D. program, coordinates Quotient’s Usability and Accessibility work for the Office of Computer and Communications Systems (OCCS) at the National Library of Medicine (NLM) since June 2004.

OCCS provides computing and networking services, technical advice, and collaboration in informational sciences in support of the research and management programs offered through NLM. OCCS helps to coordinate, integrate, and standardize a vast array of computer services available throughout all organizations comprising NLM. OCCS is also a technological resource for other parts of the National Library of Medicine (NLM) and for other Federal organizations with biomedical, statistical, and administrative computing needs. OCCS promotes the application of High Performance Computing and Communication to biomedical problems, including image processing.

The OCCS staff and Quotient Inc. contractors develop computer-based systems for information retrieval applications, conduct computer science and engineering research and development, and consult and collaborate in the area of advanced electronic office automation facilities. They support software systems to perform these services, and conduct research and evaluations.

One of the major strategic goals of the NLM is to deliver good health information on the World Wide Web. This public service idea exemplifies the history of the library which began quite humbly with a few books in the Office of the Surgeon General of the army in the early 1880s. Besides collecting information NLM is revered for having developed the Index Medicus in



1879, an index of journal articles and MEDLINE online database that lists references from 1966 to the present.

One of the primary application areas where cognitive human-computer issues are observed and studied are in our recent information access work for a “Local Legends” Website, [scheduled for launch February 2005 as <http://www.nlm.nih.gov/locallegends/>]. Other work includes accessibility tool selection and design for a Senior Health Website and Section 508 Accessibility compliance review for On-line, Virtual, and Physical Exhibits such as NLM’s upcoming Forensic Medicine Exhibit or the Changing the Face of Medicine Traveling exhibit <http://www.nlm.nih.gov/changingthefaceofmedicine/>.

The most intriguing usability issue currently is directly related to human cognitive processing concerns and relates to the name designation and of the Local Legends website itself. R. Roske-Shelton’s usability study found that “local” is indeed a highly context dependent designation and as such, not well suited to disambiguate or clarify a site’s mission for casual public users. Indeed, our usability testing results show that users appear to make one of two ethnocentric referential assumptions concerning a “Local Legends” site content.

Intended Meaning of Local Legends: regionally known female physicians, recognized by state locality, highly regarded locally as opposed to having national or global standing or visibility.



Figure 1: Visual design element identifying the Web site application and its mission

Lesson 1: Local means Washington DC to a user who is not necessarily viewing content from Washington DC. The geographical scope identification that our test users made with respect to the site was “loaded” with a variety of (inadvertent and incidental) clues misleading them to arrive at this interpretation. The usability test sponsor was identified as NLM of Bethesda, MD. Most users made the inference that it would thus be a Federal Government affiliated site. Federal Government strictly meant Washington, DC to them. Also, an unintended visual artifact included a capitol icon (instead of the letter A) which some test

participants interpreted as representing the Congressional Capitol Building. Our test participants were mostly local residents of the Washington, DC area. These users assumed that the site is local to Washington, DC only and believed that it is intended only for congressional folks and non-governmental associations and the press primarily – hence of no real interest to them as public users.

Lesson 2: Local means detailed listings of personally relevant information to the user. This second assumption arose when users thought that the site would list all physicians regardless of “local/regional geographical location” . Under Local Legends, they expected to find all physicians listed for a given location name (by State) but at a minimum, they expected a full list of all graduates and alumni by locality clusters related to Medical Schools.

Lesson 3: When searching the Local Legend (women) physician site, the concept of gender was not maintained for search specifications. In our usability testing we observed several instances away from the “Women Physician Advocacy Theme” of the site to a non-gender specific physician name search. Particularly male users would invariably search for male physician names such as Albert Schweitzer, and continued to be surprised when they got zero matching results on the site search. In fact no one ever mentioned ‘wrong gender’ as a reason why their search was not successful.

I present these findings concerning locality, reference identification confusion, and the instance of gender (as a non-relevant classification scheme), as showcase symptoms of disharmony between website message content, mission intent, operational or task purpose on the one hand, and end user comprehension based on cognitive models and referential knowledge frames or mental models, on the other. I strongly believe that this specific area of referential confusion for accessed information spaces seems ripe for a solid basic research program. Such a program would systematically determine the effects of localization referents when users are accessing information from ‘anywhere’ in a highly mobilized society. The role of judged information value/quality as a function of a user’s physical proximity to the information source or first-hand familiarity should also be a fertile field for research.

There seems to be a propensity of recent website designs which group information by geographical location, even though location does not appear to have



any particular informational value, carried either with the information, or deemed an important decision aspect of a users' selecting information from a website. Why group information according to a map of the United States, when the application domain in fact carries no intrinsic geographical dimension? What makes geographical metaphors for information access valuable? When considering public users of federal government websites, it seems highly unlikely that the "default" values for geographic centers and boundaries will coincide with an end user's cognitive model. These website design schemes may thus prove less helpful in navigating quickly to the desired information or browsing exhibits for interesting content. In fact, such design schemes may reinforce biases and ethnocentricities which may lead to the maintenance of cultural barriers and reinforce related "usability" problems rather than enabling free access to medical and educational information for all.

Articles

Review of CEDM-TG Program at 48th Annual HFES Meeting and the Road to Orlando

*By David Kaber (Program Chair)
and Catherine Burns (Program Chair Elect)*

This past year the CEDM-TG delivered one of the largest programs during a regular meeting year. The TG was initially allocated 16 sessions from HFES. Upon review of the number of submissions made to the TG, the General TPC provided us with two additional sessions. Finally, upon scheduling sessions, HFES found space for yet one more session, giving the TG a final total of 19 sessions. These sessions included 10 lectures, 3 symposia, and 6 panels. Based on original poster submissions, and lecture proposals that were reformatted as posters, the TG delivered one poster session with 22 contributions. In addition to these numbers, the TG co-sponsored several sessions with the Medical Systems and Research, Systems Design, and Safety TGs.

The lecture sessions as part of the CEDM-TG 2004 program addressed topics ranging from cognitive work analysis and cognitive modeling to data fusion and information overload, human factors in command and control, and distributed cognition and expertise and errors. The program symposia addressed current and practical issues with relevance for many participants, including homeland defense, cognitive engineering in weather forecasting, and new approaches to cognitive

work analysis. Finally, the program panels covered a wide range of contemporary topics, including augmented cognition, cognitive engineering in software systems development, human-robot interaction, and intelligence analysis.

With respect to the level of interest in these sessions, we managed to collect "head-count" data on 14 sessions during the meeting. On average, there were 70 participants per CEDM-TG session with a range from 25 to 150 attendees for specific sessions. As might be expected, smaller numbers of attendees were observed on Thursday and Friday of the meeting week. In general, the rooms for the sessions were filled to 70% of capacity and in at least three sessions there were overflow situations. One suggestion made on the basis of this attendance information was that the large conference room, allocated to the TG, could be subdivided into two rooms on Thursday and Friday in order to accommodate more sessions. Related to this, we spoke with a number of meeting attendees regarding the scheduled parallel sessions and, in general, attendees found them to be well managed.

Based on the 2004 CEDM program and the meeting, our general impression is that the CEDM-TG is very alive and healthy. Our lecture sessions are well attended and active. With respect to the panels and symposia, impressions from attendees were variable, ranging from very popular to weaker. In general, we found that excellent time keeping by session chairs and co-chairs made session hopping workable for many. The vast majority of talks went well and most work was very well prepared. (We believe that this speaks to the quality of the reviewing, which took place last year.) In general, there did appear to be quite a bit of crossover of interests among medical, aviation, military, and perception and performance research.

At this point in time, HFES and the CEDM-TG are preparing for next year's meeting in Orlando. This past year, there were 93 reviewers who volunteered to help us in processing proposal submissions. We were grateful for their thorough and thoughtful consideration of the lecture, symposia, panel and poster submissions we received. It should be noted that all submissions to the 2004 meeting, save 7 poster proposals, were reviewed by at least 3 reviewers. We would like to ensure the same review coverage and quality in preparation for the 2005 meeting.

With this in mind, we are inviting all CEDM-TG members to participate in the 2005 meeting proposal review process. If you served as a reviewer this past



year, HFES is currently working to recover your contact information from the MiraSmart On-line Proposal Submission and Review System. If this information is returned to our TG, we will contact you to confirm your willingness to help when we begin the review process in late February. If you did not serve as a reviewer this past year and would like to help us, please send email to dbkaber@eos.ncsu.edu with your full name in the subject line or body of the message. In order to make the review process more meaningful to the members of the TG this year, we also ask that you provide 2-3 keywords on your expertise. This will help us better assign papers for review. We will include you in the reviewer database for the 2005 meeting and, subsequently, contact you with proposals for review.

Finally, proposals can be submitted to the 49th Annual Meeting of HFES through February 8th. As in the past year, there are many format types to select from, including colloquia, debates, demonstrations, lectures, panels, posters, symposia, and tutorials. (Please see <http://www.hfes.org/> for additional details.) We welcome your proposals to the CEDM-TG.

We hope to develop another excellent program for Orlando and we look forward to your contribution.

Winner of the 2004 CEDM-TG Best Student Paper Award

By Haydee M. Cuevas
University of Central Florida

Each year the Cognitive Engineering and Decision Making Technical Group (CEDM-TG) recognizes the quality research done by its student members by offering the CEDM-TG Best Student Paper Award for proposals submitted to the TG for presentation at the Annual Meeting of the Human Factors and Ergonomics Society (HFES). The winner of this year's award was announced at the CEDM-TG Business Meeting during the HFES 48th Annual Meeting in New Orleans this past September. The competition was very close, particularly between the second and third place papers. Each paper received high marks on writing quality and substance of contribution, and was ranked in first place by at least one reviewer. The top three papers for this year's competition were:

First Place

Louise J. Rasmussen and Valerie L. Shalin
(Wright State University)
Task and Representation Interactions in Temporal Reasoning

Second Place

Olivier St-Cyr and Kim J. Vicente
(University of Toronto)
Sensor Noise and Ecological Interface Design: Effects on Operators' Control Performance

Third Place

Janeen A. Kochan, Eyal G. Breiter, and Florian Jentsch
(University of Central Florida)
Surprise and Unexpectedness in Flying: Database Reviews and Analyses

Each of these papers can be found in the Proceedings of the 48th Annual Meeting of the Human Factors and Ergonomics Society. Following are a few of the reviewer comments on Rasmussen and Shalin's paper:

Flawless writing. . . Compelling story. . . Important implications. Discussion clear, engaging, not pretentious, and straight to the point. This type of write-up should serve as an example of very well formulated manuscripts. To me, it clearly gets first place.

What I really liked about this article was its strong theoretical implications. Although I still question the use of such a complex study, I was impressed by how the authors handled the unexpected findings and turned that into the crux of the paper. . . These findings are also extremely generalizable to any area in which displays of timing or sequence are necessary. It nicely discusses perceptual vs. cognitive processes, as well as the idea of expectations in what the graphical representation should look like. Overall, I felt that this paper had the most significant contribution to the field of human factors.

This paper is very impressive both in its writing quality and its contribution. The statement of purpose, assumptions, hypothesis, experimental procedures, and statistical techniques are all described clearly and in an articulate manner. Discussion and conclusion are very thorough and comprehensible. Research not only identifies a better interface for the INCO domain but also aims to explain the cognitive advantages of graphical representations in temporal reasoning. Paper also points out the interactions between temporal and spatial representations, which I found to be very interesting. Overall a perfect paper, I would say.

As evidenced by the reviewer comments, the CEDM-TG should be very proud of the high caliber of the work of their student members. For more information about the CEDM-TG Best Student Paper Award, contact Stephanie Guerlain (guerlain@virginia.edu).



MIT HFES Students Win Best Paper Award at the New England HFES Student Conference

By Missy Cummings

Humans and Automation Lab

Aeronautics and Astronautics

Massachusetts Institute of Technology

Recently, several members of the Massachusetts Institute of Technology (MIT) student chapter of HFES participated in a student conference sponsored by the New England branch of HFES. Held at TUFTS University, MIT HFES members constituted seven of the eighteen speakers at the conference including a keynote address by Professor Mary Cummings on "Automation in Aviation: Are We Headed Towards Life in the Matrix?" Two of the MIT HFES students received "Best Student Presentation" Awards: Jonathan Histon for his report on an experiment probing how the use of abstractions reduces complexity for air traffic controllers, and Daniel Morales for his work examining user-centered design through storyboarding for tactical pilots controlling unmanned aerial vehicles as wingmen. The strong showing by the MIT group also included Sylvain Bruni's presentation of an experiment examining participant arousal during the use of chat windows while playing a simulated air traffic control game, and Paul Mitchell's experimental results using a headway feedback display in a driving simulator. MIT contributions were rounded out by Aaron Tans description of research on head movements for subjects exposed to centrifugal motion, and Mirna Daouk's work on developing a systems-theoretic approach to integrating human and social factors into hazard analysis techniques.

The MIT student branch of the Human Factors and Ergonomics Society (HFES) has been active for over three years with over fifty members subscribing to a mailing list and has hosted many events. These activities have included an annual welcome picnic in the Fall of each year to attract new members and raise awareness of human factors in the newly arrived student community. In addition, special guest lectures from human factors practitioners and industrial professionals have provided members insights into the world outside of academia. Recent guest lecturers have included Dr. Beth Loring who discussed usability evaluation techniques and her work as leader of the Bentley Design and Usability Testing Center, and Dr. Cindy Dominguez who talked about using cognitive task analysis to understand expert behavior during laparoscopic surgery. The group has also coordinated

journal club meetings and field trips to workplaces that exemplify human factors practices in action. Should any HFES members find themselves in the Boston area with extra time and an interest in guest speaking, please e-mail hfes@mit.edu.

7th International Conference on Naturalistic Decision Making

By Jan Maarten

TNO Human Factors

Naturalistic Decision Making will hold its 7th International Conference in Amsterdam, The Netherlands from June 15-17, 2005.

NDM 7 is the premier forum for presenting work on decision making in real-life contexts. NDM 7 brings together researchers and practitioners from diverse areas that include decision making, expertise, problem solving, situation awareness, and cognitive engineering. The intimate size, the single track, and historic surroundings make this conference an ideal opportunity to exchange research results and practitioner experience.

NDM 7 is soliciting abstracts in the general area of expertise and decision making. See www.ndm7.org for further details.

Cognitia Volume 9, No. 1, Winter 2005

Newsletter of the Cognitive Engineering and Decision Making Technical Group

Cognitia is published by the CEDM-TG of the Human Factors and Ergonomics Society. For membership information, see the HFES website at hfes.org. Questions, comments, or submissions for publications in this newsletter should be directed to the newsletter editor.

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