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Alex Williams, Investigator and Inventor

By Stanley N. Roscoe

The following story is extracted from the newest HFES publication, The Human Factors and Ergonomics Society: Stories From the First 50 Years, edited by Jack Stuster. The book was produced as part of the celebrations in honor of the Society's 50th anniversary, which occurs in September 2007. Attendees of the 50th Annual Meeting will receive a complimentary copy of the book, and others may purchase copies from the Publications page of the HFES Web site. Additional stories from the book will appear in issues of the Bulletin throughout the coming year.

The research contributions of Chris Poulton, Paul Fitts, Al Chapanis, and a few other early giants in the emerging field of engineering psychology are much better known than the experiments and inventions of Alex Williams at Illinois and at Hughes Aircraft Company, and I'd like to help correct that oversight.

Alex was hired by Herbert Woodrow, head of the Psychology Department at Illinois, who had been involved in pilot selection during World War I. Woodrow recognized the unprecedented opportunity to develop an aviation psychology program in conjunction with the university's new Institute of Aviation, and he saw in Alex a man who had the education, experience, motivation, and creativity to do just what Woodrow had in mind. The Graduate College provided Williams with \$10,000 annually as seed money, enough for a secretary, two graduate research assistants, an instrument maker, office and shop supplies, and travel expenses for Williams to pursue research contracts.

Alex had arrived in Illinois in January 1946, and when I arrived for the fall semester as a graduate student, the program was under way. Support had come quickly from the Wright Air Development Center and the Special Devices Center of the Office of Naval Research. Other contracts followed with the Civil Aeronautics Administration via the National Research Council and the Air Force Human Resources Research Center (later to become the Air Force Personnel and Training Research Center, known as "Afpatrik"). With the contracts came support for a stream of graduate students, most of them World War II pilots, who were soon swept up in Alex's zeal to solve scientifically the operational and training problems of pilots and air traffic controllers.

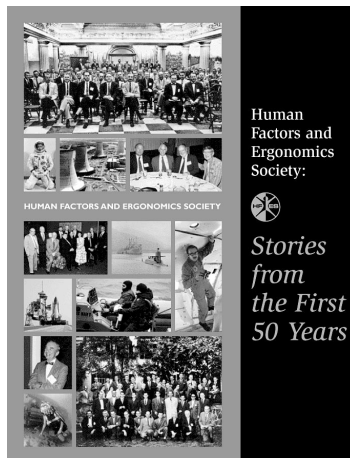
Human Engineering

The initial focus was on the "human engineering" of flight instrument displays, starting with Williams' dial-reading studies with Walter Grether of the AeroMedical Lab at Wright Field. These were followed in rapid succession by the rotating-room studies of vestibular and visual orientation as a function of display characteristics, and then came the mainline experimental programs.

Flight by periscope. Flight-by-periscope experiments were started in early 1947 and continued until mid-1952. The idea of flying an airplane by periscope was conceived in response to the Navy's interest in the potential of television for the flight control of airborne vehicles, whether flown from the cockpit or remotely. It was obviously impractical to install a laboratory full of optical and electrical hardware in a flight test airplane at that time, so a TV display was simulated by means of a periscope that projected the image of the outside world on a screen mounted above the instrument panel in the cockpit of the lab's Cessna T-50.

In both field and flight experiments, bias errors in the perceived sizes and distances of objects visible on the periscope's viewing screen were discovered and quantified. Although it was speculated at the time that the misjudgments might be associated with the accommodation of the eyes to the near distance of the screen, that possibility was not pursued experimentally until practical optometers became available in the 1970s. The strong dependence of the apparent size and distance of objects on the distance at which the eyes are focused has implications for the design of both real and virtual imaging displays.

Integrated displays. In parallel with the flight-by-periscope experiments and the concurrent transfer-of-training studies – to be discussed later – the lab undertook a program for the National Research Council to develop the optimum display of bearing and range information to be provided by the Civil Aviation Administration's new VORDME radio navigation facilities. Williams had advanced the notion of the integrated presentation of flight information, which led to his conception of map displays on which the airplane's position and heading are plotted automatically. Early



Alex Williams, Investigator and Inventor

(continued from page 1)

paper-and-pencil tests, in which pilots made rapid navigation decisions in response to drawings of various instrument displays, supported Alex's thesis.

With the evident superiority of map displays, Williams had graduate student John Bell build the first CRT map display, and Al Bowman, the lab's machinist, installed it in the cockpit of a 1-CA-1 Link trainer for experimental evaluation. On the strength of the striking improvements in the pilots' performance of terminal area instrument flight procedures, the CAA embarked on its pioneering program to develop airborne map displays and to test them in flight at the Technical Development and Evaluation Center in Indianapolis. Meanwhile, at the lab, Williams and Tom Payne pursued the investigation of the principles of control-display motion compatibility in map displays.

Air traffic control. In parallel with the map display work, the CAA asked Alex to develop the first air traffic control simulator. Al Bowman built four long, narrow tables in the lab, with four large, identical maps equally spaced on each table. Surplus navigation "crabs" for Link trainers were used to simulate airway traffic, and an electromechanical device was mounted above each map to sense the bearing and range of a crab from the center of its map, which represented the ground location of the air traffic control radar. The same was done for the crabs of the two Link trainers, and the positions of all 18 crabs were "telemetered" to a large radar scope in the "air traffic control tower."

Pilots "flew" the crabs with heading, speed, and altitude controls in compliance with the clearances issued by the "controllers" to study the feasibility and effectiveness of various experimental terminal area ATC procedures. The director of the CAA's Technical Development and Evaluation Center saw the potential of the simulator as a research and training tool. He had it moved to Indianapolis and integrated with the real-world ATC system so that controllers in the Indianapolis tower could get "high density" practice by controlling the simulated airplanes (crabs) intermixed with the real airplanes in the terminal area.

Transfer of Training

Contact and instrument flight. In 1947, reports of the motor skill

studies at the University of Iowa gave Alex the idea that the transfer paradigms of the basic learning theorists were equally applicable to the quantitative assessment of the training value of the lab's new School Link contact flight trainer. Soon thereafter, the prototype 1-CA-2 Link became the first true simulator of a specific airplane, the North American SNJ/T-6 Texan. A salvaged forward cockpit of a wrecked Texan, with its controls and displays made operative, was mounted on the bellows of a 1-CA-1 Link (the last of the "blue boxes") and delivered to the lab for evaluation. The impressive transfer-of-training experiments that followed led to the first postwar procurement of P-1 Link trainers by the Air Force.

Visual takeoffs and landings. The initial transfer-of-training experiments in the 1-CA-2 Link had demonstrated its effectiveness in teaching all primary flight tasks except takeoffs and landings. Ralph Flexman had also shown, with many doubters, that landings could be taught with significant positive transfer using a picture of an airport runway drawn on a blackboard that was tilted about its horizontal axis by the instructor as the student in a School Link "rounded out" for a "landing." Surely, Alex reasoned, if such a crude display had any transfer value, a closed-loop visual system could be highly effective in teaching beginners to land, thereby reducing the hazards of early dual-landing trials.

Point light sources had been used in celestial navigation trainers, and for the contact landing trainer, a small, bright source was used to rear-project a properly dynamic geometric image of a runway on a screen set up in front of the 1-CA-2 Link. A sheet of aluminum, with a slit cut out to represent a landing runway, was mounted over a Link trainer crab with an elevator mechanism driven by the simulator's "altitude." The crab traveled over a table behind the screen in direct response to the simulator's "heading" and "speed." The error reduction of 85% and the saving of 61% of the flight trials relative to a control group would be hard to match with present-day computer image generators.

Alex the Inventor

Alex Williams was as much an inventor as he was an investigator. The use of an airborne periscope to simulate a television set, the use of a pictorial map display to integrate aircraft position and flight path information, the use of a room full of Link trainer crabs to simulate high-density traffic in a terminal area, and the use of a point light source to generate a dynamic image of an airport runway were all his original ideas. And when he moved on to Hughes Aircraft Company in 1955 to direct an enlarged display system organization, he collaborated with fellow psychologist "Lick" Licklider, with help from physicist Harold Hance, on the invention of the pulse-Doppler radar, which revolutionized the detection of airborne targets in the presence of ground clutter and electronic noise.

Stanley N. Roscoe was Alex Williams's first graduate student at the University of Illinois, and, in 1950, he earned the first Ph.D. in the new field that became known as engineering psychology. Roscoe, a founding member of HFES, was president in 1960-1961. The HFES Alexander C. Williams, Jr., Design Award recognizes Williams's contributions to the field.



Bulletin

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HFES to Host Science Forum on Education and Competitiveness

By *Wendy A. Rogers, Immediate Past President*

On Monday, November 13, 2006, HFES will sponsor a Science Forum in Washington, D.C., tentatively titled "Human Factors Research in Science and Technology Education: Accelerating U.S. Competitiveness." The purpose of this forum is to facilitate the communication of HFES member activities to agencies such as the National Science Foundation, the Department of Education, NASA, and the Department of Defense, among others.

The HFES Science Forum will address important aspects of HF/E research relevant to education, technology use in education, the relationship between education and American competitiveness, and the role that HFES members should play in this initiative. The goals of the Forum are to inform federal funding agencies about research that has already been done that deserves attention and potential application to education and competitiveness issues, and research that has *not* yet been done but *should* be done and should be funded by the National Science Foundation, the Department of Education, and other relevant agencies. And, as is always the case with our Science Forums, we also want the scientists to hear what the federal agencies are interested in, so that the researchers can apply their efforts where there are funding opportunities.

There is a tremendous amount of high-quality HF/E work on the broad topic of education. The HFES Science Forum will provide an opportunity to present illustrative examples to key agencies. The ultimate goal is to increase the recognition of this work and to highlight its potential to improve various aspects of education and competitiveness.

We have been working with the staff of the Federation of Behavioral, Psychological, and Cognitive Sciences to define the agenda for the forum. The topic of education and competitiveness was selected based on guidance from the Executive Council and input from members. This topic was chosen partly in response to the National Academy of Sciences Report "Rising Above the Gathering Storm," which speaks to the importance of education in the context of the information technology revolution and about which HFES President Marv Dainoff wrote in the February *Bulletin*.

We surveyed the chairs of all the technical groups for their recommendations for speakers at the forum. HFES members who will be presenting at the forum are Robert Hoffman (University of West Florida), Alan Lesgold (University of Pittsburgh), Mark Scerbo (Old Dominion University), and Carolyn Sommerich (Ohio State University). We are in the process of identifying speakers from the relevant government agencies.

Assistance with the organization and coordination of the HFES Science Forum is provided by the Federation. Last year we organized a very successful forum on the topic of homeland security (http://www.thefederationonline.org/events/2005_HFES/index.php) and the year before on patient safety (http://www.thefederationonline.org/events/2004_HFES/index.php).

If you are interested in attending the forum, please contact HFES Executive Director Lynn Strother (lynn@hfes.org). ☒

Applications for Fellow

The HFES Fellows Selection Committee invites applications for Fellows and Honorary Fellows of the Society to be elected in 2007. Individuals may apply for Fellow status on their own behalf, or they may submit an application (formerly nomination) on behalf of another.

Election to Fellow status is an honor conferred by distinguished colleagues to recognize outstanding achievement, consistently superior professional performance, exceptional contributions, personal service to the Society, and other meritorious accomplishments by Society Full Members. For Honorary Fellows, there is no criterion of service to the Society. Any Full Member of the Society in good standing (except members of the Fellows Selection Committee) may apply or nominate by completing the application forms for Fellow. No limitation is placed on the number of times a Full Member may be considered for election to Fellow or Honorary Fellow.

Prospective applicants should carefully review the rules and regulations for Fellow designation and the guide for preparing the contribution statement in the application package prior to initiating the process.

Applicants must solicit recommendations from three other Full Members who are willing to provide written recommendations in support of the candidate. The meritorious contributions of the applicant must be detailed in the application form and must be supported by evidentiary documentation included with the package.

The Fellow Application Package, including instructions, nomination and recommendation forms, and supporting information, may be obtained from HFES, P.O. Box 1369, Santa Monica, CA 90406-1369, carlos@hfes.org. The application may also be found at <http://hfes.org> under the "About HFES" and "Membership" sections. The completed application package (application form, recommendation form, candidate's curriculum vitae or résumé, and supporting documentation) must be received by the Fellows Selection Committee at the HFES central office on or before **February 1, 2007**. Applications received after this date will be considered in 2008. Applications approved by at least two-thirds of the Fellows Selection Committee and a majority of the full Executive Council will be recommended for approval to all Fellows by mail ballot. ☒

STUDENT VIEWS

The FAA has announced an airport design competition for undergraduate and graduate students at U.S. colleges and universities. Students will have the chance to address challenges in the areas of airport operation and maintenance, runway safety, and airport environmental interactions. The deadline to submit designs is **April 20, 2007**. Cash awards and prizes will be presented. For more information, visit http://www.faa.gov/runwaysafety/design_competition.htm. ☒

Earth Day at Georgia Tech

By Anne Adams, President, & Marita O'Brien, Immediate Past President, Georgia Tech Student Chapter

When Georgia Tech's Earth Day campus celebration for April 22 was announced, there was no question that the Georgia Tech Student Chapter would be a part of it. One of our many goals is to spread the word about human factors/ergonomics (HF/E) to students and faculty, and our mission was to connect Earth Day and HF/E in a memorable way. We decided to focus on current recycling opportunities around campus: Are people aware of them? How do they find the drop-offs? How well does the current system work?

After some research, we created a comprehensive map showing recycling locations and materials on campus. It was exciting to apply our understanding of how people read maps and how people with color abnormalities would perceive our color coding. To communicate this in an interesting and innovative way, we are in the process of designing a t-shirt with the map on its back. We think that people will unobtrusively look at the shirt and learn about recycling on campus while, for example, standing in line.

Designing the map also became a tool for our Earth Day booth. We used it to inform Earth Day participants about what they could recycle and where, while we engaged in discussions about human factors issues concerning drop-off locations and the design of recycling receptacles. Are they placed where they are needed? Do people recognize them? What are some of the challenges?

We found that many Earth Day participants who visited our booth already recycled but said that they would recycle more often if there were more opportunities to do so. Inconvenience and poor locations were mentioned as the biggest barriers to recycling.

We were impressed that Earth Day participants were so motivated to recycle and were encouraged to learn that an understanding of human factors can help increase recycling. We are using our experience from this year's event to prepare for next year's Earth Day. For more information, please visit our Web site at <http://cyberbuzz.gatech.edu/hfes/>. ☒

Annual Meeting Sponsors

HFES is grateful to the following sponsors for their support of the 50th Annual Meeting:

- Booz Allen Hamilton (Opening Plenary Session)
- Dell (e-Message Center)
- Haydee Cuevas (Brown Bag Mentoring Lunches)
- HumanCentric Technologies (pens and notepads, volunteer T-shirts)
- Microsoft (Closing Plenary Session)
- Taylor & Francis (Student Reception)
- User Centric, Inc. (badge holders)



Missy Cummings, director of the Humans and Automation Laboratory at the Massachusetts Institute of Technology, was featured in an article in the April/May issue of Smithsonian *Air & Space* magazine about the future of lunar landings. Cummings was quoted about her involvement in the design of cockpit displays for new lunar vehicles.

Najmedin Meshkati, an associate professor at the University of Southern California, was quoted in an August 29, 2006, *New York Times* article about the Blue Grass Airport plane crash in Kentucky. He stated that most runway incursions are "design- or system-induced," and that the airport's runway systems might be factors to analyze in the investigation.

Alan Hedge was quoted in the February 2006 issue of *Today's Facility Manager*. Hedge, who directs the Human Factors and Ergonomics Laboratory at Cornell University, talked about how facility managers can use ergonomics methods to identify potential problems.

Elizabeth Mauer, a human factors specialist at HumanCentric Technologies, wrote an article for WRAL's (NC) Local Tech Wire Web site in September. She explained how election candidates and campaign sign designers could benefit from applying human factors to political campaign road signs, making them easier to see and more memorable to voters.

A recipient of the 2006 Franklin Institute Award, **Donald A. Norman**, was featured in an April 24 *Philadelphia Inquirer* article, "Scientist crusades for commonsense design," about the award and his efforts in advocating for user-friendly products. ☒

PEOPLE

Larry W. Avery was hired by BMT Designers and Planners as a senior human factors analyst. He may be reached at 919/552-9264 or via e-mail at lavery@dandp.com.

Tomas Berns of Sweden's ERGOLAB was named first chair of a new IEA technical committee established in July by the union of the Work with Computing Systems (WWCS) conference series and the IEA Technical Committee on Human Computer Interaction. The new IEA-TC will be named WWCS. Berns may be reached at tomas.berns@ergolab.se.

John G. Casali, the Grado Chair professor of Industrial and Systems Engineering at Virginia Tech, received the Alexander G. Holtzman Distinguished Educator Award from the Institute of Electrical Engineers and was named to the scientific advisory board of the Oxford Research Institute. Casali may be reached at the Industrial and Systems Engineering Department, Virginia Polytechnic Institute and State University, 519G Whittemore Hall, Blacksburg, VA 24061, 540/231-5073, jcasali@vt.edu.

PEOPLE, cont.

David M. DeJoy received the IEA/Liberty Mutual Medal for his research on a new safety management system, published in *Safety Science*. He may be reached at the Department of Health Promotion & Behavior, University of Georgia, 300 River Rd., Athens, GA 30602, 706/542-4368, ddejoy@coe.uga.edu.

Robert Goldberg and **David M. Rempel** were awarded the 2006 IEA/Liberty Mutual Prize for their paper on workstation modification to prevent upper-body pain, published in *Occupational and Environmental Medicine 2006*. Rempel may be reached at the Department of Medicine, University of California, San Francisco, 1301 S. 46th St., Bldg. 163, Richmond, CA 94804, 510/231-5720, drempe@itsa.ucsf.edu.

William J. Horrey joined the staff of the Liberty Mutual Research Institute. He may be reached at Liberty Mutual Group, 71 Franklin Rd., Hopkinton, MA 01748, 508/497-0237, william.horrey@libertymutual.com.

Y. Ian Noy was named director of the Liberty Mutual Research Institute. He succeeds Tom B. Leamon, who will retire in late 2006. Noy may be reached at Liberty Mutual Group, 71 Franklin Rd., Hopkinton, MA 01748, 508/497-0215, ian.noy@libertymutual.com.

The work of **Karen Piegorsch**, a consultant with the Arizona-based consulting company Synergo, led to the company's recognition as a 2006 Tech Museum Awards Laureate. The product that earned this honor is the Backstrap Weaver's Ergonomic Bench, which reduces fatigue and injury among Mayan women weavers. Piegorsch may be reached at Synergo, 4901 N. Calle Luisa, Tucson, AZ 85718, 803/727-8588, karen@bewellworkbetter.com. ☒

CALLS FOR PAPERS

Work With Computing Systems

Submissions are sought for the 2007 Work with Computing Systems Conference, to be held May 21–24, 2007, in Stockholm, Sweden. This year's main theme is "Computing Systems for Human Benefits." Subthemes include healthy and efficient work with computer systems and computing systems for mobile and non-mobile work.

All abstracts must be submitted as a Microsoft Word attachment via e-mail to wwcs2007@niwl.se. The deadline is *October 20, 2006*. Abstracts may also be accepted as poster presentations. For more information, visit <http://www.wwcs2007.se/>.

Conference on Human-Computer Interaction

Organizers of the 2007 International Conference on Human-

Computer Interaction (HCI), to be held July 22–27, 2007, in Beijing, China, are seeking submissions on topics such as human-computer interaction, ergonomics and health, engineering psychology, virtual reality, and online computing.

All submissions are due *October 30, 2006*. Formats include abstracts, poster presentations, and half- or full-day tutorials. Detailed instructions for submissions are available on the conference Web site at <http://www.hcii2007.org/submissions.html>.

American Psychological Association Annual Convention

The APA Board of Convention Affairs announces the "Call for Workshops" and the "Call for Programs" for the 2007 APA Annual Convention, which will be held August 17–20, 2007, in San Francisco, CA.

The deadline for workshop proposals is *November 5, 2006*. They can be submitted online only at <http://www.apa.org/ce/>.

Proposals for presentations, symposia, and other formal sessions will also be considered. Deadline for submissions is *December 1, 2006*. For detailed instructions and more information, visit <http://www.apa.org/>. ☒

CALENDAR

Announcement deadlines: First day of the month prior to the desired issue; for events or deadlines within the first three weeks of a month, send information at least two months in advance. Items are published according to space availability. A more detailed Event Calendar is available at <http://hfes.org>.

- ★ **2006 NSC Congress and Expo**, November 2–10, 2006, San Diego, CA. National Safety Council, 1121 Spring Lake Dr., Itasca IL 60143, 800/621-7619, customerservice@nsc.org, <http://www.congress.nsc.org>.
- ★ **TAG 56: Department of Defense Human Factors Engineering Technical Advisory Group Meeting**, November 6–9, 2006, Monterey, CA. Sheryl Cosing, 703/925-9791, fax 703/925-9694, scosing@comcast.net, <http://hfetag.dtic.mil/meetschl.html>.
- ★ **HFES Europe Chapter Annual Meeting**, November 8–10, 2006, Sheffield, UK. Dick de Waard, HFES Europe Chapter, d.de.waard@hfes-europe.org, <http://conference.hfes-europe.org>.
- ★ **4th International Aviation Security Technology Symposium**, November 27–December 1, 2006, Washington, D.C. National Safe Skies Alliance, McGhee Tyson Airport, 2057 Alcoa Highway, Alcoa, TN 37701, 865/970-0515, fax 865/970-0506, safes skies@sskies.org, <http://www.sskies.org/symposium.htm>.
- ★ **4th Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan**, November 28–December 2, 2006, Honolulu, HI. Elaine Moran, ASA, 2 Huntington Quadrangle, Suite 1N01, Melville, NY 11747, 516/576-2360, fax 516/576-2377, asa@aip.org, <http://asa.aip.org/meetings.html>.

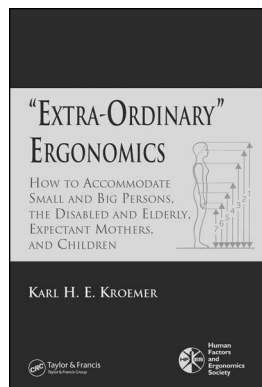
2007 Events

- ★ **2007 Conference on Human-Robot Interaction**, March 9–11, 2007, Washington, D.C. Alan Schultz, Naval Research Laboratory, 202/767-2684, fax 202/767-3172, schultz@aic.nrl.navy.mil, <http://www.bri2007.org>.

CALENDAR, cont.

- ★ **10th Annual Applied Ergonomics Conference “Celebrating the Past, Shaping the Future,”** March 12–15, 2007, Addison, TX. Institute of Industrial Engineers, 3577 Parkway Lane, Suite 200, Norcross, GA 30092, 800/494-0460, fax 770/441-3295, <http://www.appliedergo.org/conference>.
- ★ **2007 Human Systems Integration Symposium**, March 19–21, 2007, Annapolis, MD. Jennifer McKneely, Symposium Chair, jennifer.mckneely@jhuapl.edu, <http://www.navalengineers.org/Events/HSIS2007>.
- ★ **Human Performance, Situation Awareness, and Automation (HPSAA III) Technology Conference**, April 3–6, 2007, Cocoa Beach, FL. Mustapha Mouloua, Conference Chair, Dept. of Psychology, P.O. Box 1390, Orlando, FL, 32816, 407/823-2910, fax 407/823-5862, mouloua@pegasus.cc.ucf.edu, <http://faculty.erau.edu/hpsaa/>.
- ★ **2007 Society of Automotive Engineers World Congress**, April 16–19, 2007, Detroit, MI. Society of Automotive Engineers World Headquarters, 400 Commonwealth Dr., Warrendale, PA 15096, 724/776-4841, mjena@sae.org, <http://www.sae.org/congress>.
- ★ **Ergonomics Society Annual Conference**, April 17–19, 2007, Nottingham, UK. Sue Hull, Ergonomics Society, Elms Court, Elms Grove, Loughborough LE11 1RG, UK, +44 0 1509 234904, fax +44 0 1509 235666, hulls@ergonomics.org.uk, <http://www.ergonomics.org.uk>.
- ★ **14th International Symposium on Aviation Psychology**, April 23–26, 2007, Dayton, OH. Richard Jensen, 5329 Van Fossen Road, Johnstown, OH 43031, 740/967-4030, rjensen@core.com, <http://www.wright.edu/isap/>.
- ★ **CHI 2007**, April 28–May 3, 2007, San Jose, CA. Helena Mentis, chi2007-admin@acm.org, <http://www.chi2007.org>.
- ★ **2007 International Performance Improvement Conference**, April 28–May 3, 2007, San Francisco, CA. International Society for Performance Improvement, 1400 Spring St., Ste. 260, Silver Spring, MD 20910, 301/587-8570, fax 301/587-8573, <http://www.ispi.org/ac2007/>.
- ★ **SID 2007**, May 20–25 2007, Long Beach, CA. Society for Information Display, 610 S. 2nd St., San Jose, CA 95112, 408/977-1013, fax 408/977-1531, office@sid.org, <http://www.sid.org>.
- ★ **Work With Computing Systems 2007**, May 21–24 2007, Stockholm, Sweden. WWCS 2007, NIWL, SE-113 91, Stockholm, Sweden, +46 8 619 67 43, fax +46 8 618 36 35, wwcs2007@niwl.se, <http://www.wwcs2007.se>.
- ★ **6th Creativity and Cognition Conference**, June 13–15, 2007, Washington, D.C. Ted Selker, Creativity and Cognition Conference, 20 Ames St., Cambridge MA 02139, 617/253-0291, fax 617/253-0910, selker@media.mit.edu, <http://sabrinaliao.com/cc2007/>.
- ★ **4th International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design**, July 9–12, 2007, Stevenson, WA. Kathy Holeton, University of Iowa/PPC, 223 South Quadrangle, Iowa City, IA 52242, 319/335-6804, fax 319/335-6801, kathy-holeton@uiowa.edu, <http://www.driver-assessment.org>.
- ★ **HCI International 2007**, July 22–27, 2007, Beijing, P.R. China. <http://www.hcii2007.org/>.
- ★ **PREMUS 2007: Sixth International Scientific Conference on Prevention of Work-Related Musculoskeletal Disorders**, August 26–30, 2007, Boston, MA. 617/384-8692, fax 617/384-8690, premus2007.org, <http://www.premus2007.org>.

★ Indicates new listing



“EXTRA-ORDINARY” ERGONOMICS:

How to Accommodate Small and Big Persons, The Disabled and Elderly, Expectant Mothers, and Children

BY KARL H. E. KROEMER


This comprehensive guide to designing for special populations illustrates various approaches to measuring the characteristics, capabilities, and limitations of those who differ from the norm. Kroemer explains how to assess and determine abilities and needs and demonstrates how to design tools, homes, and environments to make working space safe and living space easy. Researchers and students will find helpful information about measuring people’s sizes, strengths, weaknesses, and capabilities. Includes index. Order online: hfes.org/Publications

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Department of Mechanical and Industrial Engineering Faculty Position Opening in Industrial Engineering – Boston, MA

The Department of Mechanical and Industrial Engineering <http://www.mie.neu.edu> invites applications and nominations for a faculty position in Industrial Engineering beginning in September 2007. We will consider applicants from all areas of Industrial Engineering. All professorial levels, assistant, associate, and full professors are welcome to apply.

A PhD in Industrial Engineering or a closely related field is required. The successful candidate will be expected to develop a funded research program and excel in teaching in both our undergraduate and graduate programs. Exceptional candidates at the associate or full professor levels will be considered for an appointment with tenure. Northeastern University is committed to cooperative education and is a national research university, which is student centered, and an urban campus. Applications, including a statement of research and teaching interests, a detailed resume, and the names, addresses and email addresses of three references, should be sent, no later than December 15, 2006. Electronic submissions are encouraged.

Professor Ronald Mourant, Search Committee Chair,
Department of Mechanical and Industrial Engineering,
334 Snell Engineering Center, Northeastern University,
Boston, MA 02115, USA; Voice: (617) 373-3931,
Fax: (617) 373-2921; mourant@coe.neu.edu

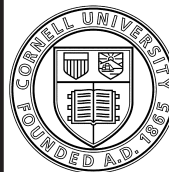
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Tenure-Track Appointment - 03994

Located in Ithaca, N.Y., Cornell University is a bold, innovative, inclusive and dynamic teaching and research university where staff, faculty, and students alike are challenged to make an enduring contribution to the betterment of humanity.

Cornell University's multidisciplinary Department of Design and Environmental Analysis (<http://www.human.cornell.edu/che/DEA/index.cfm>) invites applications for a tenure-track appointment to teach courses and conduct a research program that addresses issues related to facility planning, design, and human health and behavior. A Ph.D. is required. A background in a design or facility planning related field is desirable. Rank and salary are open.

Send letter of application, a curriculum vitae, letters of reference from three people, and up to three representative publications to: **Nicki Nedrow, Department of Design & Environmental Analysis, E104 MVR, Cornell University, Ithaca NY 14853-4401** or via email to: **CHERecruitment@cornell.edu**.



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<http://chronicle.com/jobs/profiles/2377.htm>

Interprofessional Fellowship Program

Patient Safety

The Office of Academic Affiliations and the National Center for Patient Safety, Department of Veterans Affairs (VA) announces its one year fellowship in patient safety. The purpose of the Interprofessional Fellowship Program in Patient Safety is to provide post-residency trained physicians and post doctoral or post master's degree trained associated health professionals (such as nurses, psychologists, pharmacists, social workers and health care administrators) in-depth education in patient safety practice and leadership.

This program is accepting applications for positions to begin July 1, 2007 at VA facilities in Ann Arbor, MI; Indianapolis, IN; Lexington, KY; Palo Alto, CA; Tampa, FL; White River Junction, VT.

The Interprofessional Fellowship Program in Patient Safety links individualized, mentored training at the six training sites to a state-of-the-art curriculum in the science of patient safety improvement. Fellowship sites are linked electronically for didactic, academic and research efforts.

Physicians must be either board-eligible or certified in a recognized medical specialty. Applicants from clinical disciplines requiring doctoral level education to qualify as an independent practitioner must possess the required degree (e.g. DDS, DPM, PhD, etc.). Clinical fields that recognize independent practitioners possessing degree levels below that of Master's degree (e.g., Registered Nurse or Registered Dietitian) must have completed a Master's degree (or all requirements for the degree) to be eligible for participation in this program. Nurses, social workers, and health care administrators must possess at least a Master's degree.

VA will provide funds for Fellows' stipends.

For more information about VA Special Fellowship Programs:

Contact: Stuart Gilman, MD, MPH
Web: www.va.gov/oaa/specialfellows/
Email: stuart.gilman@va.gov



NEW!

Reviews of Human Factors and Ergonomics, Volume 2

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About the Editor

Robert C. Williges is the Ralph H. Bogle Professor Emeritus of Industrial and Systems Engineering at Virginia Polytechnic Institute and State University. Williges was president of the Human Factors and Ergonomics Society and president of Division 21 of the American Psychological Association. He is a past editor of *Human Factors*, has authored more than 275 scientific publications, and has given more than 190 technical presentations at scientific meetings.

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VOLUME 2

Edited by
Robert C. Williges

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