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As another school year draws to a close, the GMU HFES Student Chapter can look back on a period of growth and innovation. We have branched out into new areas, pursued new projects, and have more active members than ever before. We had another excellent speaker series, culminating with Jorge Cham, the author of Ph.D. Comics. Active participation is especially important now as we prepare to host the 51st Annual Human Factors and Ergonomics Society meeting in Baltimore this October.

I have enjoyed my tenure as student chapter president and the executive council has worked hard to ensure that the future of the chapter is bright. I know that when Ewart de Visser steps in as President at the end of this year, he will continue to expand and improve the activities of the chapter. Our ongoing projects include a redesign of the Arch Lab website following user-centered design principles and video podcasting of Human Factors design reviews of new and innovative products.

I want to thank everyone in the Arch Lab for their support and enthusiasm in helping us ensure that the student chapter and the HFAC program remain strong and ever improving. I would also like to say congratulations and good luck to our graduates and wish everyone else a relaxing and productive summer. See you all in the fall!
Dr. Fu goes for blonde highlights...right after this ERP study

Ewart de Visser tries out the “night driving without headlights” simulation

Jane Barrow searches for the “eject” button on the flight simulator.

Dan Caggiano tries out our new simulation simulator*

*actually an eye-tracker, but a simulation simulator would be cool.

Dr. Fu goes for blonde highlights...right after this ERP study
A New Drive in the Arch Lab: An interview with Dr. Christopher Monk
by Ewart de Visser

**EdV:** Our sources tell us you have received a new piece of technology here in the Arch Lab. Could you tell us what it is?

**CM:** We have a brand new driving simulator from Realtime Technologies, Inc. (RTI). It consists of an actual driver’s compartment from a Ford Focus. Even the radio/CD player and fan work as they do in a real car. The visual display system consists of three 42” plasma displays covering approximately 180° forward field-of-view. The steering wheel has RTI’s force feedback system that provides realistic resistance when turning and driving in curves. The most unique feature of our simulator is its ability to rotate up to 90° to the right and left. I’m unaware of any other driving simulator of this size with this level of yaw-motion capability. Combining the yaw-motion with a single degree pitch motion system to simulate the onset feeling of acceleration and braking, we believe we have the makings of a state-of-the-art open-cab driving simulator. Very soon we will be adding a 7” touchscreen display to the dashboard to simulate in-vehicle devices.

**EdV:** Where does your simulator rank in terms of fidelity compared to other driving simulators?

**CM:** Level of fidelity is in the eye of the beholder. Although our simulator is not a complete car, it is not a simple video-game sim either. In determining fidelity, vehicle context is important, but so are the motion-cues to simulate vehicle responsiveness. I would say that our simulator has high fidelity given its real car cab configuration, immersive visual system, and yaw motion-base. I should mention that the yaw motion is very important for Dr. Maria Kozhevenko’s use of the simulator for research on spatial navigation.

**EdV:** What was the rationale for choosing this particular simulator?

**CM:** We chose RTI because their software is flexible and extensible, and they were able to develop a hardware solution [see above] with IMX-IDEAS in California that met our needs and stayed within our budget. RTI’s SimCreator and SimVista software provide powerful scenario authoring capabilities that allow us to “build” any roadway that suits our needs, as well as the ability to control nearly all aspects of virtual traffic and roadside elements, including custom signs and displays. More important, we can precisely control “events” in the simulation for experimentation purposes, as well as record dozens of measures. Finally, RTI’s software is already integrated with the eye-tracker we hope to purchase before too long.

**EdV:** Your past research has included studying interruptions and multi-tasking. How do you think can you integrate what you’ve found in that area and apply it to a dynamic context such as driving?

**CM:** I am interested in applying some of the theory that we have been using here in interruptions research to the transition cost of switching between the driving task and in-vehicle tasks, such as programming a destination into a route guidance system or [using] an iPod. These systems are more and more common now in cars. As the driver looks down and enters data into the system and switches attention back to the driving scene, our interruption research suggests that there is cost in doing so. I want to look deeper into those costs and apply the theory that we have here to that context. We also hope to pursue a variety of in-vehicle human factors issues related to driving, including evaluations of warnings, in-vehicle system interfaces, and even novel infrastructure solutions like roundabouts. In fact, we hope that our yaw motion allows us to evaluate roundabouts in the simulator without inducing much simulator-sickness.
EdV: Could you describe the car of the future? Will it look like something out of “Back to the Future?”
CM: I think you are going to see greater automation introduced into the vehicle. I recently saw the commercials for the Lexus automated parallel parking system where you see the Lexus park automatically between two crystal pillars. There are already a variety of other advanced technologies being integrated into vehicles, such as adaptive cruise control that will adjust the speed depending on the distance of the car in front of you. This is a forerunner of collision warning systems that will give you a warning prior to a potential crash. There are several challenges for the driver-vehicle context that arise with these kinds of technologies. For example, false alarms can be a significant issue, as well as how to give control back to the driver. Cognitive Workload Managers are also on the horizon as a means of helping drivers distribute workload from other sources while driving. These are just a few human factors issues that will be important as new technologies continue to be developed.

EdV: What advice could you give to the “average” driver?
CM: It is easy to say, “Don’t do other activities while driving,” but that’s a bit unrealistic. I would advise drivers to be smart about when they engage in other tasks. Take advantage of the “gaps” in driving. For example, wait until you are stopped at a light before adjusting your iPod. People seem to have an urgency to pick up the phone when it rings, but most calls can wait a few minutes until it’s safer to talk.

EdV: What is your favorite car in terms of human factors?
CM: I don’t know about the human factors, but I like my cars by Subaru and Toyota.

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**Congratulations!**

Drs. Christopher Kello and Matthew Peterson were recently awarded tenure and promoted to associate professor.

Dr. Kello heads the Cognitive Dynamics lab and is currently researching emergent properties of cognition, particularly language structure and behavioral dynamics.

Dr. Peterson heads the visual attention and cognition lab and is currently researching mechanisms that guide attention and how attention affects information processing.

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**Grad School Hilarity? - It’s not just an oxymoron anymore**

Jorge Cham, creator of Ph.D. comics was as entertaining in person as he is in the comics taped to office doors throughout the lab.
SPEAKING OUT!

Designs We Love to Hate!
by JENNIFER MOORE

Yi-Fang Tsai
Our house has already lost two toaster ovens to tragic fires, each after one year of use. Most toaster ovens are known as fire hazards when crumbs or items come too close to the heating element. Nevertheless, most ovens are badly designed, often to compact and difficult to clean. We had high expectations for our new toaster oven, the Hamilton Beach Toastation Toaster, a combination pop-up toaster and toaster oven. The idea of combining kitchen appliances into one sounds at first appealing, but to date only leads us to focus on its drawbacks. The main problem with the toaster oven is that there is barely any overhead clearance for items you want to toast! The pop-up toaster portion works decently well for making toast but any tall items such as chicken wings and other leftovers cannot fit inside this toaster oven. Furthermore, the toaster oven has no timer!

David Cades
Many people have advanced home entertainment systems with components from many different companies and this means too many remote controls. In response to this a number of so-called “Universal” remotes have hit the market. These remotes are supposed to control all of your components, and for the most part they do. The biggest problem is that in order to simplify your life you have to pour through a huge user manual written by engineers for engineers and then you maybe have a 50% chance of getting your remote to work. The idea is great; the implementation is poor. My advice, keep on working.

Steve Jones
“What was Honda thinking? The change compartment in my Civic could not have been designed nor positioned more poorly. The bottom-hinged door is curved outward, spilling change once you accumulate more than a few dollars. To top it off, they placed it at the bottom of the center console near the floor AND behind the pop-up cup holders. So not only does a driver have to lean down to access the compartment, he also has to remove and balance any drinks that may be in the cup holders. When approaching a toll plaza, trying to access the correct change only invites an accident.”

David Kidd
Have you ever looked at the control panel in an elevator, and become extremely confused? Which floor is the ground floor? Is the lobby the first floor? What does “BR” stand for? Symbols and abbreviations used in elevator control panels vary from building to building and without any kind of standard set of symbols, elevator control panels keeps users guessing. The only similarity between elevator control panels is that trusty star indicating that you are at or may be near the bottom floor. Though most of the symbols we see in an elevator may seem intuitive, trial and error methods are usually employed in order to reach our desired floor. A little more thought and effort into elevator control panel design would not only reduce headaches, but would save time lost to solving the riddles that await on every elevator control panel.

Andrew Blumenfeld
Last Spring, I took up the challenge of building a new computer from the ground up. I picked this case because it had many desirable features. However, there is one design flaw that drives me crazy. That large silver button in the middle is the “Power” button. It sticks out nearly a quarter of an inch and takes very little pressure to activate. I’ve lost count of how many times I’ve bumped it with my foot, or just brushed it up against it while plugging in a USB device. Most new computers have a small, recessed power button, but I guess the makers of this case haven’t figured that out yet.

Jane Barrow
The design I hate most is the downstairs women’s bathroom of David King Hall. Basic principles of good design dictate that components that have related functions should be located in close proximity to one another. What has a more closely related function within a bathroom than the sink and soap dispenser? Yet, the designer of this bathroom seems to think that the soap and towel dispensers have more in common, placing the soap dispenser on a completely separate wall from the sink. Every time I enter this room, I ask myself, “Why??”
Dr. Shimin Fu: “The role of the striate cortex (also known as “V1”) in visual information processing has traditionally been considered a passive receptor. However, recent evidence from neuroimaging studies has shown that the striate cortex is involved in attention, indicating its role as an active processor. While fMRI techniques provide inaccurate temporal information about when the striate cortex is involved (e.g., early involvement vs. late feedback), event-related potential (ERP) techniques are ideal to address cognitive timing with millisecond-scale accuracy.

Our recent studies used the C1 component, the first visual cortical response, as an index of striate cortex activity. We applied a peripheral cueing paradigm and manipulated the perceptual load of stimuli. In contrast to previous findings which showed no attentional modulation on C1, we found that the amplitude of C1 was affected by attentional manipulation when, and only when, the perceptual load was high. This suggests that the striate cortex can be involved in the attention process at an early stage, in contrast to possible late feedback mechanisms.”

Dr. Patrick McKnight: “The most exciting advance in my research area has little to do with the content and more to do with technology. High speed, interconnected computing revolutionized quantitative methods. While that statement might sound as if it trivializes other theoretical advances, I would argue that theory and application were far ahead of their time before computers became ubiquitous. Without the processing power to conduct advanced data analytic procedures, these theoretical advances remained merely conceptually appealing ideas. So now we have computers that can run a seemingly infinite number of iterations in a short period of time without incurring added costs. These iterations then form the basis for better, more robust methods of both exploring data and testing theories. I am confident that many areas in science benefited from advances in computer technology but none more so than areas reliant on intensive computations, and my research area in particular seems to have benefited greatly.”
Commitment to Excellence

The Arch Lab is in a state of transition. Over the past 2 years, we have hired 4 new faculty, nearly doubled our lab space and added a host of new technology. All this change serves to increase our profile and add value to our Mason affiliation.

We are currently working with the GMU development office to create some exciting opportunities for alumni and other friends of the Arch Lab to participate in our drive towards excellence. To continue to attract the best and brightest to our program, we will be partnering with individuals and organizations to provide the best possible academic environment for prospective students and faculty.

We’ll be kicking things off with a big celebration of our 35th anniversary on October 25, 2007. Plan on joining us for a reception and tour of our expanded facilities.

Check our website and the pages of this newsletter for details as we roll out our development plan over the next several months.

Celebrate 35 Years!
Arch Lab Anniversary Celebration
October 25, 2007

for more information: http://www.archlab.gmu.edu/

Exhilarating Advances...

Dr. Pamela Greenwood: “Our research group made progress this year in understanding the complex relation between genetic risk of Alzheimer’s Disease (AD) and age. The e4 allele of the apolipoprotein E (APOE) gene which affects risk of AD in old age (Corder et al., 1993), also modulates cognition in midlife (Greenwood, Lambert et al., 2005; Greenwood et al., 2000; Greenwood, Sunderland et al., 2005) and brain integrity in young adulthood (Reiman et al., 2004; Scarmeas & Stern, 2006).

However, the allele is not sufficiently predictive of AD to be used clinically. If the cognitive effect of the e4 allele in midlife reflects a phenotype, that effect should be seen even in old age. Alternatively, if the cognitive effect of the allele reflects a prodrome of AD, it should be weaker in people remaining non-demented late in life. We recently published several studies bearing on this question. We found healthy carriers of the APOE-e4 allele with the TT genotype of a CHRNA4 polymorphism were selectively slowed in discrimination following invalid cues (Epeseth et al., 2006). There was a greater effect in middle-aged relative to the old.

In another study, we found the cognitive effect declined from midlife (aged 41-59) to old age (aged 60-75) but was absent in the oldest old (aged 81-86) (Negash et al., 2006). Consistent with those findings, we have now followed nondemented e4/e4 homozygotes with the greatest risk of AD who do not show cognitive effects of the e4 allele and have not converted to AD for 9 years (Greenwood, Sunderland et al., 2005). Considered together, this work indicates that cognitive change in midlife in APOE-e4 carriers is indicative of an AD prodrome. Therefore, the absence of cognitive change in some e4 carriers suggests the genetic risk of AD is somehow ameliorated. My recent functional plasticity hypothesis predicts that APOE-e4 carriers showing heightened activation in atrophic brain regions would convert to AD at a reduced rate (Greenwood, in press). Testing the predictions of this hypothesis could illuminate the factors underlying why some people escape the consequences of heightened genetic risk of AD.”

Dr. Pamela Greenwood
GMU Associate Professor
ERP Systems Lab
Fun...

Game Night

...and after

Laser Tag before...

...Food...

Thanksgiving Dinner

...Fitness...

Soccer Team

Tennis & Racquetball Leagues

...Philanthropy

Sandwich-making for the Homeless

Walk-a-thon

Intramural Basketball Champions !!!
Fifteen Arch Lab students enjoyed a 4-day ski trip in West VA this winter. Events turned sinister however, when poor signage contributed to falls, confusion and missed happy hours.

Please restrict all skiing to non-snow areas!

Orientation of sign directs all skiers to the condo (●) or the sidewalk (■). The ski slope (left) is apparently unrated, unnamed and not recommended.

1. The path to get back to the beginner slope (●) starts partway down an intermediate slope (■).
2. Tiny marker indicates closed/unsafe path conditions to the beginner slope, but allows passage anyway.

User testing revealed that a novice user could find the unsafe path, miss the warning, crash onto a pile of rocks, take 10 minutes to get up, fail to get his boot put back together, and 15 minutes later engender enough sympathy to get a snowmobile ride down to the chair lift.

Conclusion: Snowmobiles rock!!!

It’s really hard taking pictures while standing on skis, unless you want pictures of the skis, or better yet, nearby snow.

Routes to “Cut Off” and “Powderidge Lift” seem reasonable, but that middle route through the trees looks difficult. No wonder it’s a black diamond.

A hot meal and some Wii action prepare this intrepid reporter for another day of

Human Factors
Ewart de Visser, a second year master’s student in the Arch Lab, recently won two student paper awards. He was awarded the best graduate student presentation at the 2007 joint meeting of APA Divisions 21 and 19 for his paper, “Effects of Imperfect Automation on Human Supervision of Multiple Uninhabited Vehicles.”

Ewart also won the best student paper award for the Training Technical Group at the 50th Annual Meeting of the Human Factors and Ergonomics Society, held in San Francisco in October of 2006, for his paper “A Comprehensive Methodology for Assessing Human-Robot Team Performance for Use in Training and Simulation.”

Doctoral student Carl Smith recently received two grant awards to support his dissertation research. He is investigating the effects of functional aviation displays on novice pilot knowledge, specifically whether knowledge improvements with one display will transfer to another.

Carl received the GMU College of Humanities and Social Science (CHSS) doctoral dissertation fellowship, along with a student grant award from the Training Technical Group of the Human Factors and Ergonomics Society.

Dr. Christopher Monk, the driving sim king, showed off his people skills by winning the GMU “Student Organization Best New Advisor of the Year” award.

“What student organization?” you ask? Why that would be the HFES student group. You know, the one that won “Best New Student Group” last year!

The student team of Carl Smith, Peter Squire, Jane Barrow, Jennifer Moore, and Kevin Durkee was recently awarded the "Most Effective Corporate/Community Interaction" at GMU's Innovations 2007. They recently completed a design contest submission to the Federal Aviation Administration (FAA) for an innovative approach for preventing runway incursions. Their solution utilizes a mix of technology that holds the potential for detecting runway threats and providing direct warnings to the cockpit of an aircraft.

In other news...

Dr. Raja Parasuraman was recently appointed to two new professional positions. He was appointed to the editorial board of the APA's Journal of Experimental Psychology: Applied and was also elected as the chair of the awards committee of the Human Factors and Ergonomics Society.
A comprehensive methodology for assessing human-robot team performance for use in training and simulation.

Age-related changes in attentional distribution in a working-memory task.

Assessing Novice Pilot Knowledge with a Functional Display.

Be useful: Reflections from a former intern.

Collaborating and self assessment: How to combine 360 assessments to increase self understanding

Comparison of the effects of two SNPs in the DBH gene on working memory.

Controller performance and attention allocation in future air traffic management: Effects of pilot intent information.

Designing an Intelligent WiFi Mobile Device Interface with Work Domain Analysis.

Designing, evaluating, and training flight decks of the future.

Effects of attention on working memory are modulated by a nicotinic SNP.

Effects of imperfect automation on human supervision of multiple uninhabited vehicles.

Experimental evaluation of a new autoflight interface.

Helpful or harmful? Examining the effects of interruptions on task performance.

Human factors of remotely operated vehicles.

Identification of distractors during visual search does not guarantee explicit memory.

Interruptions in the office: An observational field study.

Mitigating Disruptions: Can Resuming an Interrupted Task Be Trained?

Normal variation in DBH genotype modulates age effects on working memory performance.

People like big, bright things: Investigating the effects of saliency on visual search.

Prevention of Rear-End Crashes in Drivers with Task-Induced Fatigue Through the Use of Auditory Collision Avoidance Warnings.

Switching costs with multiple unmanned vehicles (UVs): Effects of workload and levels of automation.

The importance of patterns in data analysis.

Training Boeing’s Flight Deck of the Future: An experimental comparison of existing and prototype automated flight panels.

Using spatial information to facilitate task resumption.

Using Task Analysis to Inform Storyboarding: Leveraging Tasks in the Design Space.

Voluntary and involuntary zooming of attention differentially affect visual search: an event-related potential study.

Who plays what? Videogame usage among soldiers and potential training effects.
Automated and interactive real-time systems.

Designing for flexible interaction between humans and automation: Delegation interfaces for supervisory control.

Effects of automated conflict cueing and traffic density on air traffic controller performance and visual attention in a datalink environment.

Effects of imperfect automation on decision making in a simulated command and control task.

Get a grip on the carnage.


Mitigating adverse effects of workload, stress, and fatigue with adaptive automation.

Neural responses elicited to face motion and vocalization pairings.

Neuroergonomics—application of neuroscience to human factors.

Neurogenetics of cognition.

Real-time data display, spatial visualization ability, and learning force and motion concepts.

Scale-free networks in orthographic and phonological wordforms.

Scene recognition following locomotion around a scene.

Task Performance and Eye Activity: Predicting Behavior Relating to Cognitive Workload.

Testing the limits of cognitive plasticity in older adults: Application to attentional control.

Training-induced functional activation changes in dual-task processing: an fMRI study.

Training-induced plasticity in older adults: effects of training on hemispheric asymmetry.

Updating representations of learned scenes.

New Faculty Member!

In our next issue we will be spending A Moment With... our newest Arch Lab faculty member, Caryl Baldwin. She joins us from Old Dominion University, where she has studied auditory cognition, in-vehicle displays and cognitive aging.
JW: Welcome to the DC area. You were at Rutgers University before moving to join us here at Mason. Have you found Northern Virginia to be very different from NJ?

MK: No, it’s exactly the same - there’s not much difference. Everything, the people, how dense it is... even when I drive, I couldn’t even tell you where I am!

JW: At the National Science Foundation, you are the director of the Science of Learning Centers program. Can you tell me a little more about that?

MK: This is the biggest program that the National Science Foundation has. It funds not individual PIs, but big centers on all topics related to learning, from a multidisciplinary perspective on all levels, from neuronal bases of learning, to socio-cultural theories... our centers include researchers from neuroscience, biology, psychology, computer science, and educational specialists, and language. So, in one center, we have a variety of people working on one problem.

JW: Everyone's excited about having a virtual reality lab in our basement. Can you tell me a little about your research in this area?

MK: There are a lot of uses of virtual reality that teach procedural skills - for example, surgeons, flight simulators, driving simulators. But, surprisingly, it is not used very much for facilitating conceptual understanding. Our idea was to try to build physics worlds where people in VR can study physics and try to simulate all the invisible phenomena like force and acceleration. We are trying to find the advantage of 3-D [learning] versus 2-D. It’s not as obvious because there is a lot of excitement in science education about this, but no one knows what it does or how it’s better than 2-D displays... For example, right now, 3-D is helpful to see electromagnetic phenomena, and another is the idea of relative motion, when you can switch frame of reference in VR and experience this and see how the whole world changes around you. It seems to make a huge difference.

JW: So now you can not only experience the 3-D world, but augment it, too.

MK: Yes! This is the next step that we want to do. What we want to do is to build on what we have so you can do physics experiments but add virtual reality pieces like electromagnetic lines and forces so you can see them in reality. Right now, we have a real physics system and the same system simulated in VR. The idea is that you can work on the real system and then work on the simulated system in VR and see all this invisible stuff. But, of course, in the future, we’d like to connect them and augment them so you can work on real physics equipment but see overlapping virtual reality lines on the real equipment.

JW: How did you become interested in educational technology?

MK: It all started from visualization. I started as a physicist, so my undergraduate is in physics and my master’s in physics education. The topic of my master’s thesis was the role of visualization in physics discoveries. So I was always interested in visualization. So that’s how I got my Ph.D., studying visualization and mental imagery abilities. When you know a lot about mental imagery and individual differences, you can design much better curriculums, displays.

JW: You’ve lived in so many places. How does living in the US compare to other places?

MK: It is very different - it is totally different on the East Coast and Baltimore and New York, which is completely different from the West Coast. I cannot merge them into one country - there are totally different place and people.
**JW:** You’re originally from Russia. How often do you get back there to visit?

**MK:** Not often - I haven’t been to Russia for ten years. But I’ve visited a million other places because of my job. I was invited by the Dalai Lama to do research in a monastery with monks to study their visualization skills. It was my sabbatical year. They were claiming that monks have exceptional visuospatial abilities which unfortunately we did not find. But it was a fantastic year; we ran a lot of monks and saw all different styles of monasteries, and different kinds of meditations. We studied how different meditation styles affected visuospatial abilities. Actually, we did find some very interesting things because some types of meditation do improve visuospatial abilities - not by an extraordinary amount, but they do improve, and others actually hurt them.

**JW:** Do you get to travel for fun?

**MK:** I love to travel for fun, mainly to Florida. I love the west coast of Florida, and I try to travel there as much as I can because I love the setting and the beautiful Gulf.

**JW:** One last question - part of your research focuses on navigation, and we Northern Virginians really like to complain about how impossible it is to navigate around the area. Of all the places where you’ve lived, what’s the easiest place to navigate? Or the hardest?

**MK:** To be totally honest, I have problems navigating in any place - I am a really bad navigator, and that is the reason why I started to do this research! I’m trying to minimize my own navigation as much as possible. It’s funny, because I learn all about good strategies, but it doesn’t help me. The only way for me to navigate is with my GPS. It doesn’t matter where I am, I just follow where it tells me to go.

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**Transitions**

**Michel Brudzinski**

This summer I will be taking a road trip to Yellowstone. In the fall, I will be entering the Cognitive Science doctoral program at Rensselaer Polytechnic Institute (RPI), my father’s alma mater. I will be working with Dr. Wayne Gray. Everyone has been really great at George Mason and I will particularly miss working with Dr. Trafton.

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**Ricardo Prada**

Upon completion of my dissertation work, my new wife Sara and I will be packing our bags again, trading cloudy Seattle for foggy San Francisco. I’ll also be shifting the context of my research from Boeing flight decks to interfaces under development at Google. I am profoundly thankful for the friendships and guidance I have found at Mason, and I look forward to keeping in touch. You can keep up with my further adventures at www.LeapGap.com.

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**Carl Smith**

I’m currently completing my dissertation and exploring career opportunities in human factors. I’m especially grateful to the faculty in the Arch lab, whose instruction helped me understand how to better evaluate and communicate ideas effectively. I can be contacted via email at mac.smith@gmail.com, or through my online portfolio at evaluatingdesign.com

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**Farilee Mintz**

I have been working at Booz Allen Hamilton in their Transportation Department since the Fall followed by completing my Master’s Degree in December, 2006. Working simultaneously throughout the program enabled many of the learned concepts and techniques to be rapidly used in the field. Leadership roles in the Newsletter and HFES, created a balance between professional- and student-life. I’m looking forward to new adventures and staying in Northern Virginia.
Arch Lab chapter hosting
HFES 2007!

The GMU student chapter of the Human Factors and Ergonomics Society (HFES) has been selected to serve as the host planning committee for the 51st Annual Meeting in Baltimore. Scheduled for October 1-5, 2007 at the Marriott Waterfront, the meeting brings together hundreds of working professionals, professors, and students from across the country, all interested in experiencing the latest developments in the field.

Under the direction of Ewert de Visser, planning is already under way for each of the seven subcommittees, each accepting a key set of responsibilities to make the Annual Meeting a success. Here is a preview of what to expect from the committee chairs:

• **Hospitality**: chair: David Kidd
  The Hospitality committee has been working hard to gather a running list of restaurants and tourist attractions in the Inner Harbor area of Baltimore. They will be producing a city guide for attendees, organizing hotel navigation, and staffing the visitor information booth at the meeting.

• **Newsletter**: chair: Kevin Durkee
  For each day of the annual meeting, the newsletter committee will be designing a newsletter to keep guests up-to-date on activities, while also highlighting the high profile events and award-winners. The committee also gathers photography and will handle distribution of publications throughout the meeting.

• **Social Events & GMU Visibility**: chair: Yi-Fang Tsai
  This committee is responsible for planning the big social event for October 4th in Baltimore, where hundreds of guests will be attending for their enjoyment. They also plan on organizing several additional events, such as a GMU alumni social event and recommending tour sites to HFES nationals.

• **Student Affairs**: chairs: Jennifer Moore & Peter Squire
  With hundreds of students at the annual meeting, the student affairs committee focuses on creating opportunities for students to network and meet new people. They plan on bringing back the student lounge, in addition to organizing lunch groups, setting up a photo board, and possibly even adding some new traditions of their own.

For a glance at last year’s HFES 2006 Annual Meeting, check out our Special Edition newsletter detailing the week-long experience in San Francisco:

Sneak Peek…

The Arch Lab will also have their usual assortment of innovative research to present at HFES 2007:

- **PR & Marketing**: chair: Reshma Kumar
  
  Raising interest and boosting attendance is an important area for the annual meeting, and this committee is spearheading the effort. They plan to assist with contacting media outlets and newspapers, as well as gaining support from local organizations and human factors professionals.

- **Keynote Speaker**: chair: Carl Smith
  
  The keynote speaker event is generally considered the biggest and most publicized event of the week. This committee has gathered a list of potential high-profile speakers, along with specific details on each candidate. They will also assist with planning the keynote speaker event.

- **50th Anniversary Theme**: chair: Jane Barrow
  
  With the approach of the HFES 50th anniversary, the celebration of this landmark is a central theme of the annual meeting. The theme committee has brainstormed a number of ideas, and will collaborate with HFES nationals to discuss potential ways of promoting and spreading interest of the their 50th.

*Carl F. Smith* – “Using Displays to Improve Training: Functional Aviation Displays Improve Novice Piloting Knowledge”

*David M. Cades* – “Does the difficulty of an interruption affect our ability to resume?”

*David Kidd* – “More is Less: The Effect of Single and Multiple Interleaved Interruptions on Task Resumption” (from work by: D. Kidd, & C. Monk)

*Ewart de Visser* – “Effects of Imperfect Automation and Task Load on Human Supervision of Multiple Uninhabited Vehicles” (from work by: E. De Visser & R. Parasuraman)


*Peter Squire* – “Attentional scaling in the search for multiple targets in young and old”

*Raj Ratwani* – “Using Peripheral Processing and Spatial Memory to Facilitate Task Resumption”

*Sarah Henrickson* – “Visuospatial Attention Is Distributed Around A Target With An Inhibitory Surround In Older Adults During Visual Search” (from work by: P.M. Greenwood, S. Henrickson, & R. Parasuraman)
Our featured alumnus for spring 2007 is Deborah Bruce, who earned her PhD in Human Factors and Applied Cognition in May 2000. Her primary interest is human error, particularly operator error, and she is currently working in the Safety Studies and Statistical Analysis Division within the Office of Research and Engineering at the National Transportation Safety Board (NTSB).

This Division is staffed with five Ph.D. Human Factors Specialists and one statistician who identify emerging issues in transportation safety and design and conduct studies to answer transportation safety questions. Recent projects include aircraft certification, pipeline control systems and risk factors associated with aviation weather-related accidents. The Division is currently in the middle of a study on the effectiveness of airbags in small airplanes as part of an assessment of small passenger vessel safety.

Dr. Bruce splits her time between Washington, DC and Northampton, MA where she is renovating an old Victorian house. Deborah is still in touch with a number of people from her GMU days. Once every few months Deborah gets together with Meg Sweeny and Raphael Marshal, also from the NTSB, and other alumni, including Brian Phillips, Katherine Wockinger (Noblis) and Jean Fox (Bureau of Labor Statistics). Deborah believes that it is always beneficial to keep in touch with alumni and other professionals in your field, and fun too!

Find out more about Dr. Bruce’s research:

A Sneak Peek at Next Semester’s Issue…

HFES Convention 2007
A Special Issue with everything you want to know about the Arch Lab’s involvement in this exciting convention. Sure, we’re not the only school in attendance, but we at the newsletter are a little biased

35th Anniversary Celebration!

Changing of the Guard
Meet the new HFES Executive council as well as the new Newsletter staff.

A Moment with…
Carryl Baldwin

New Website
Our students are collaborating on a new design for the Arch Lab website. Practice what you preach!
Parting Thoughts

This newsletter has highlighted the recent activities of the HFAC program at George Mason University. The newsletter, and the HFAC program itself, would not be possible without the tremendous energy and enthusiasm of the students in the program. And so in these closing comments I would like to thank all of them for all their fantastic accomplishments over the past few months.

Two themes are apparent in the current newsletter. The first is the recent influx of technology to support our innovative research, such as the driving simulator, the VR system, and a high-density (128 channel) brain electrical activity recording system. I too share their marvel at these "cool new toys", but as human factors people we should not forget that our intent should be to use them as tools to investigate theoretical and practical issues in cognition and human performance, and not get too caught up with the technologies themselves!

The second theme is the prominent role that the student chapter will play in the next annual conference of the Human Factors and Ergonomics Society in Baltimore in October. This will provide us with a great opportunity to highlight the activities and accomplishments of the GMU Human Factors and Applied Cognition program. In support of that goal, I have been successful in getting a large number of our faculty and students to present papers or posters at the meeting. We will be there in force and we hope to see you too!

On behalf of each of the faculty in the program, let me once again thank all the HFAC students for all their efforts. Well done!