Announcing the Final Examination of Anthony Costello for the degree of Doctor of Philosophy

Time & Location: June 25, 2014 at 2:00 PM in Engineering 2 312
Title: Human Face Mnemonics for Information Retrieval Under Workload

As the amount of computer mediated information (e.g., emails, documents, multi-media) we need to process grows, requirements to rapidly sort and store information likewise increase. In order to store information effectively, we must find ways to sort through it and organize it in a manner that facilitates efficient retrieval. The instantaneous and emergent nature of communications across networks like Twitter makes them suitable for discussing events (e.g., natural disasters) that are amorphous and prone to rapid change. It can be difficult for an individual human to filter through and organize the large amounts of information that can pass through these types of social networks when events are unfolding rapidly. A common feature of social networks is the images (e.g., human Faces, inanimate objects) that are often used by those who send messages across these networks. Humans have a particularly strong ability to recognize and differentiate between human Faces. This effect may also extend to recalling information associated with each human Face. This study investigated the difference between human Face images, non-human Face images and alphanumeric labels as retrieval cues under different levels of workload. Participants were required to recall key pieces of event information as they emerged from a Twitter-style message feed during a simulated natural disaster. A counter-balanced within-subjects design was used for this experiment. Participants were exposed to low, medium and high workload while responding to five different types of recall cues: Nickname, Non-Face, Non-Face & Nickname, Face and Face & Nickname. The task required participants to organize information from a Twitter-style message feed during a simulated natural disaster. The messages reported various events such as fires occurring around a fictional city. Each message was associated with different recall cue type, depending on the experimental condition. Following the task, participants were asked to recall the information associated with one of the cues they worked with during the task. Results indicate that under medium and high workload, both Non-Face and Face retrieval cues increased recall performance over Nickname alone with Non-Faces resulting in the highest mean recall scores. When comparing medium to high workload: Face & Nickname and Non-Face significantly outperformed the Face condition. The performance in Non-Face & Nickname was significantly better than Face & Nickname. No significance was found between Non-Faces and Non-Faces & Nickname. Subjective workload scores indicate that participants experienced lower mental workload when using Non-Face cues than using Nickname or Face cues. Generally, these results indicate that under medium and high workload levels, images outperformed alphanumeric nicknames, Non-Face images outperformed Face images, and combining alphanumeric nicknames with images may have offered a significant performance advantage only when the image is that of a Face. Both theoretical and practical design implications are provided from these findings.

Major: Industrial Engineering

Educational Career:
Bachelor's of Aeronautical Science, BS, 1998, Embry-Riddle Aeronautical University
Master's of Industrial Engineering, MS, 2007, University of Central Florida

Committee in Charge:
Waldemar Karwowski, Chair, Industrial Engineering and Management Systems
Ahmad Elshennawy, Industrial Engineering and Management Systems
Peter Hancock, Psychology
Haydee Cuevas, Embry-Riddle University
Richard Gilson, UCF

Approved for distribution by Waldemar Karwowski, Committee Chair, on June 10, 2014.

The public is welcome to attend.