

MARYAM ZAHABI

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EDUCATION

North Carolina State University • Raleigh, NC May 2017

Ph.D. in Industrial & Systems Engineering • Ph.D. Minor: Statistics

- Major Area of Specialization: Human Factors Engineering/Cognitive Ergonomics.
- Cumulative GPA: 4.00/4.00
- Dissertation: "Analysis and Redesign of Police Vehicle Mobile Computer Terminal for Minimizing Officer Driving Distraction."
- Research Advisor: Dr. David B. Kaber

Sharif University of Technology • Tehran, Iran June 2013

M.S. in Industrial & Systems Engineering

- Cumulative GPA: 4.00/4.00

Sharif University of Technology • Tehran, Iran June 2011

B.S. in Industrial & Systems Engineering

- Cumulative GPA: 3.90/4.00

WORK EXPERIENCE

Intern • Amway • Ada, MI Summer 2016

Teacher Assistant • North Carolina State University • Raleigh, NC 2015-Present

Research Assistant • North Carolina State University • Raleigh, NC 2013-Present

Teacher Assistant • Sharif University of Technology • Tehran, Iran 2010-2013

RESEARCH EXPERIENCE

Analysis and Redesign of Police Vehicle Mobile Computer Terminal (MCT) for Minimizing Officer Driving Distraction **2014-Present**

North Carolina State University • Dissertation Research

Assessed the most important and frequently used MCT tasks using field interviews with several police officers. The most visually and cognitively demanding in-vehicle tasks were found using cognitive modeling methodology. Usability violations and design recommendations were used as a basis for developing an enhanced MCT interface to reduce officer distraction. The enhanced design was tested vs. the current MCT interface in a driving simulation experiment to further validate the theoretical enhancements. The enhanced design will improve officer safety and reduce distraction especially in emergency situations.

Usability Evaluation Toolkit for Durable Products **Summer 2016**

Amway • Internship Project

Worked as a usability expert at Amway. Conducted a comprehensive literature review on usability evaluation methods and developed selection criteria to find the most applicable methods for the company. The methods were mapped to different stages of the design cycle. The toolkit helped Amway to conduct usability evaluations internally to improve user's experience of the durable products.

Evaluation of Attentional Demands of Specific Service Signs and Driver Performance under Freeway and Ramp Conditions **2014-2016**

North Carolina State University

Assisted in a project funded by North Carolina Department of Transportation (NCDOT) to assess driver performance and visual behavior effects of driver familiarity with logo and text targets, as well as logo and guide sign format. Also, assessed the impact of ramp located specific service sign category, formatting and information content on driver ramp use and visual behavior.

Assessing Mental Workload of Upper Limb Prostheses **2014-2016**

North Carolina State University

Assisted in a joint project with Biomedical Engineering Department to measure cognitive workload of using upper limb prostheses by analyzing eye tracking data.

Assessing Usability and Safety of Electronic Medical Records Interface design **2014-2015**

North Carolina State University

Conducted a comprehensive literature review study on usability and safety of Electronic Medical Records (EMRs) and formulated a set of design guidelines to enhance the current EMRs. In addition, managed a research team which designed an enhanced EMR interface considering human-computer interaction principles to reduce usability and safety problems and improve users' performance.

Effects of Multimodal Information Presentation during Physical Loading **2013-2015**

North Carolina State University

Assisted in a project which recruited members of the United States military to perform a cognitive task presented using visual, auditory, and haptic feedbacks while subjected to various running speeds on a treadmill in a three-dimensional virtual reality locomotion simulator.

TEACHING EXPERIENCE

- Co-Instructor for NCSU ISE 352 (Fundamentals of Human-Machine Systems Design) Fall 2016
- Guest lecturer for NCSU ISE 541 (Occupational Safety Engineering) Spring 2016
- Guest lecturer for NCSU ISE 741 (System Safety Engineering) Fall 2015
- Guest lecturer for NCSU ISE 452 (Advanced Human-Machine Systems Design) Spring 2015

PUBLICATIONS

REFEREED JOURNAL ARTICLES

1. Pankok Jr, C., **Zahabi, M.**, Zhang, W., Choi, I., Liao, Y., Nam, C., Kaber, D. (2016). The effects of interruption similarity and complexity on performance in a simulated visual-manual assembly operation. *Applied Ergonomics Journal*, DOI: 10.1016/j.apergo.2016.08.022
2. Pankok Jr, C., **Zahabi, M.**, Zhang, W. & Kaber, D. (2016). The Effect of Physical Workload and Modality of Information Presentation on Cognitive Inhibition in High-Fit Young Males. *IIE Transactions on Occupational Ergonomics and Human Factors*, 1-16.
3. Kaber, D., Jin, S., **Zahabi, M.**, Pankok Jr, C. (2016). The Effect of Driver Cognitive Abilities and Distractions in Situation Awareness and Performance under Hazard Conditions. *Transportation Research Part F: Traffic Psychology and Behaviour*. DOI: 10.1016/j.trf.2016.07.014
4. **Zahabi, M.**, Kaber, D. B., & Swangnetr, M. (2015). Usability and Safety in Electronic Medical Records Interface Design: A Review of Recent Literature and Guideline Formulation. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 57(5), 805-834.
5. Sheik-Nainar, M., Kaber, D., Hsiang, S., Pankok Jr, C., & **Zahabi, M.** (2015). Influence of cognitive and perceptual processing on multitask performance with locomotion. *Theoretical Issues in Ergonomics Science*, 16(3), 273-298.

6. **Zahabi, M.**, Machado, P., Pankok Jr, C., Lau, M., Liao, Y., Hummer, J., Rasdorf, W., Kaber, D.B. (in revision). The Effects of Driver Age, Number, Familiarity, and Format of Specific Service Sign Panels on Driver Performance and Attention Allocation. Submitted to *Applied Ergonomics Journal*.
7. **Zahabi, M.**, Machado, P., Lau, M., Deng, Y., Pankok Jr, C., Hummer, J., Rasdorf, W., Kaber, D.B. (in review). Driver Performance and Attention Allocation in Use of Logo Signs on Freeway Exit Ramps. Submitted to *Applied Ergonomics Journal*.
8. Kaber, D.B., **Zahabi, M.** (in revision). Enhanced Hazard Analysis and Risk Assessment for Human-Automation Interaction. Submitted to *Human Factors: The Journal of the Human Factors and Ergonomics Society*.
9. **Zahabi, M.**, Zhang, W., Pankok Jr, C., Lau, M., Shirley, J., Kaber, D.B. (in revision). Effect of Physical Workload and Modality of Information Presentation on Pattern Recognition and Navigation Task Performance by High-Fit Young Males. Submitted to *Ergonomics*.
10. White, M., Zhang, W., Winslow, A., **Zahabi, M.**, Zhang, F., Huang, H., Kaber, D.B. (in review). Usability Comparison of Conventional Direct Control vs. Pattern Recognition Control of Transradial Prostheses. Submitted to *IEEE Transactions on Human-Machine Systems*.

REFEREED CONFERENCE PROCEEDINGS

1. **Zahabi, M.**, Zhang, W., Pankok Jr, C., Lau, M., Shirley, J., Kaber, D.B. (in press). Effect of Physical Workload on Navigation Task Performance by High-Fit Young Males. To appear in *Proc. Of the 2016 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*.
2. **Zahabi, M.**, White, M., Morejon, O., Zhang, W., Swangnetr, M., Kaber, D.B. (in press). A Usability Evaluation of Electronic Medical Record Interface. To appear in *Proc. of the 2016 Industrial and Systems Engineering Research Conference*.
3. Zhang, W., White, M., **Zahabi, M.**, Winslow, A.T., Zhang, F., Huang, H., Kaber, D.B. (in press). Cognitive Workload in Conventional Direct Control vs. Pattern Recognition Control of an Upper-limb Prosthesis. To appear in *Proc. of the 2016 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*.
4. Kaber, D.B., **Zahabi, M.** (in press). An Enhanced Hazard Analysis and Risk Assessment Method. To appear in *Proc. of the 2016 Industrial and Systems Engineering Research Conference*.
5. **Zahabi, M.**, Pankok Jr, C., Zhang, W., Choi, I., Liao, Y., Nam, C., Kaber, D.B. (in press). The Effects of Interruption Similarity and Complexity on Assembly Operation Performance. To appear in *Proc. of the 2016 Industrial and Systems Engineering Research Conference*.
6. **Zahabi, M.**, Kaber, D. B., & Swangnetr, M. (2015). A Constrained Review of Safety Analyses of Electronic Medical Record Use and Recommendations for Enhanced Design. *Proc. of the IEA2015 – 19th World Congress on Ergonomics*. Melbourne, AUS (August 9-14): Elsevier.
7. C. Pankok, Jr., **M. Zahabi**, W. Zhang, D. Kaber (2015). Cognitive Inhibition and the Interaction between Physical Load and Information Presentation Modality. *Proc. of the IEA2015 – 19th World Congress on Ergonomics*. Melbourne, AUS (August 9-14): Elsevier.
8. Sheik-Nainar, M., Pankok Jr, C., & **Zahabi, M.**, Kaber, D., (2015). Effect of Locomotion Environment Familiarity and Cognitive Loading on Gait Control and Situation Awareness in Multitasking. *Proc. of the IEA2015 – 19th World Congress on Ergonomics*. Melbourne, AUS (August 9-14): Elsevier.
9. **Zahabi, M.**, Machado, P., Pankok Jr, C., Lau, M., Hummer, J., Rasdorf, W., Kaber, D.B. (in revision). On-road visual sign salience, driver attention allocation and target detection accuracy. Submitted to *Proc. of the 2017 Transportation Research Board Annual Meeting*. Washington, D.C.

AWARDS

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| 1. Shook Mentou Scholarship award | 2016 |
| 2. Accepted to participate in 2016 IIE Doctoral Colloquium , Anaheim, CA. | 2016 |
| 3. Awarded a National Science Foundation (NSF) student travel grants for the 2016 ISERC in Anaheim, CA. | 2016 |
| 4. Prepare the Professorate (PTP) program fellowship award | 2016 |

5. Awarded a **Certificate of Appreciation** from **foundation of professional ergonomics** for being a runner-up in the **2015 Dieter W. Jahns Student Practitioner Award.** 2015
6. Member of Alpha Pi Mu (Industrial Engineering Honor Society) 2014-Present
7. Edward P. Fitts Graduate Fellowship Award 2013-2015
8. Awarded "**high pass**" on doctoral qualifying exams 2014
9. North Carolina State University Graduate Fellowship Award 2013-2014
10. Graduate scholarship • Sharif University of Technology • Tehran, Iran 2011-2013
11. Undergraduate scholarship • Sharif University of Technology • Tehran, Iran 2007-2011

PROPOSAL DEVELOPMENT

- **NC Occupational Safety and Health Education and Research Center**
 - *Pilot project proposal on "Analysis and Redesign of Police Vehicle Mobile Computer Terminal for Minimizing Officer Driving Distraction"*
- **NC Department of Transportation**
 - *Project proposal on "Evaluation of Attentional Demands of Specific Service Signs and Driver Performance Under Freeway and Ramp Conditions"*
- **National Cooperative Highway Research Program**
 - *Project proposal on "Principles and Guidance on Dynamic Information for Driver Use of Active Traffic Management Strategies"*

GRANTS AWARDED

- NC Occupational Safety and Health Education and Research Center (NC OSHERC) Pilot Project Award, NIOSH, Co-PI, \$ 9,624.00, 2015-2016.

TECHINCAL REPORT CONTRIBUTIONS

- Kaber, D., J. Hummer, W. Rasdorf, **Zahabi, M.**, Machado, P., Lau, M., Deng, Y. (2016). Evaluation of Attentional Demands of Specific Service Signs and Driver Performance Under Freeway and Ramp Conditions. Report Submitted to the Transportation Mobility and Safety Branch of the North Carolina Department of Transportation.

INVITED PRESENTATIONS

- **Human Factors and Ergonomics (HFE) Brownbag Seminars** • Department of Psychology • North Carolina State University • Raleigh, NC (9/23/15)
 - Topics: (1) *The Effect of Physical Workload and Modality of Information Presentation on Cognitive Inhibition*; (2) *A Constrained Review of Safety Analyses of Electronic Medical Record Use and Recommendations for Enhanced Design*
- **National Occupational Research Agenda (NORA) Seminars** • University of North Carolina at Chapel Hill • Chapel Hill, NC (4/6/16)
 - Topics: (1) *An Enhanced Hazard Analysis and Risk Assessment Method*; (2) *The Effects of Interruptions on Assembly Task Performance*
- **Research Seminar** • Department of Information Science • Drexel University • Philadelphia, PA (11/1/16)
 - Topic: *Usability and Safety in Electronic Medical Record and Mobile Computer Terminal Interface Design*

SERVICE

- Chair of "Systems Safety Engineering Research Session" at *2016 Industrial and Systems Engineering Research Conference*, Anaheim, CA, May 21-24, 2016.

MEMBERSHIPS

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| 1. Institute of Industrial Engineers (IIE), Member | 2016-Present |
| 2. Human Factors and Ergonomics Society (HFES), Member | 2015-Present |

REFEREE FOR JOURNALS AND CONFERENCES

Ad Hoc Reviewer for Journals and Conference Proceedings

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|---|---------------|
| • <i>IEEE Transactions on Human-Machine Systems</i> | 2015- Present |
| • <i>Accident Analysis & Prevention</i> | 2016 |
| • <i>Applied Clinical Informatics</i> | 2016 |
| • <i>IIE Annual Conference</i> | 2016 |

POPULAR PRESS

- Research featured in *The Statistical Discovery Magazine*, "Navigating road safety improvements," 9/16, p. 57. (<http://www.jmp.com/content/dam/jmp/documents/en/jmp-foreword/JMP-Foreword-2016.pdf#59>).
- Research featured in *Time Warner Cable News*, "Engineering Police Safety", Raleigh, NC, aired 10/31/16. (<http://www.ise.ncsu.edu/ingearonline/videos/engineering-police-safety.html>).