Sukwon Lee

Ph.D. Candidate
School of Industrial Engineering
Purdue University
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Research Interests

Data Visualization, Visualized Decision Making, Visualization Literacy
Human Factors, Human Computer Interaction, Cognitive Engineering, User Experience

Education

Ph.D.		School of Industrial Engineering Purdue University West Lafayette, IN, USA ***Specialty***: Human Factors ***Advisor***: Ji Soo Yi	08/2012 – present
M.E.		Industrial Systems Engineering Graduate School of Information Management and Security Korea University Seoul, Republic of Korea ***Specialty***: Human Factors ***Thesis Title***: Predicting Menu Selection in Mobile Phone Using Predictive Statistical Model: Markov Chain Approach ***Advisor***: Rohae Myung	03/2007 – 02/2009
B.E.	Major	Department of Industrial Systems and Information Engineering College of Engineering	03/2003 – 02/2007
	Minor	Department of Business Administration Business School Korea University Seoul, Republic of Korea	

Military Service

Faculty Officer	**1st and 2nd Lieutenant of Republic of Korea Army**	06/2009 – 05/2012

Work and Teaching Experience

Graduate Assistant 05/2015 – present
Data Analytics and Information in Engineering Dean's Office
Purdue University

Graduate Teaching Assistant 08/2012 – 05/2015
School of Industrial Engineering
Purdue University

- Data Visualization: Theory and Practice (graduate course)
  – Spring 2015
- Work Analysis and Design II (undergraduate course)
  – Spring 2015, Fall 2014, Spring 2014, Fall 2013, Spring 2013, Fall 2012

Full-time Instructor 06/2009 – 05/2012
Department of Weapon Systems and Mechanical Engineering
Korea Military Academy

- Introduction to Industrial and Systems Engineering (undergraduate course)
  – Spring 2011, Fall 2010, Spring 2010, Fall 2009
- Systems Engineering and Analysis (undergraduate course)
  – Fall 2011, Fall 2010
- Weapon Systems (undergraduate course)
  – Fall 2011, Fall 2010, Spring 2010, Fall 2009

Graduate Research Assistant 03/2007 – 02/2009
Department of Industrial Systems and Information Engineering
Korea University

Graduate Teaching Assistant 03/2007 – 02/2009
Department of Industrial Systems and Information Engineering
Korea University

- Human Factors & Lab II (undergraduate course)
  – Fall 2008, Fall 2007
- User Interface Design & Lab (undergraduate course)
  – Spring 2008, Spring 2007

Research Experience

HIVE Lab 08/2012 – present
School of Industrial Engineering
Purdue University

- NOVIS Model
  – Conducted a qualitative study by observing users when they endeavored to make sense of unfamiliar visualizations, and analyzed think-aloud data using the grounded theory method
  – Proposed a grounded model of NOvice's information VIsualization Sensemaking (NOVIS model) with five sensemaking activities
  – Reference: [J7]

- VisOHC
  – Conducted a design study to develop a visual analytics application for online health community (OHC) administrators
  – Reference: [J6]

- Quantitative Measurement of Intuitiveness of Visualization Techniques
  – Supported by Google Inc.
  – Developed a visualization comprehension questionnaire of eight information visualizations and measured crowdsourced workers' comprehension levels

- Understanding of Noncompliance Behaviors with Healthcare Information Systems
  – By reviewing existing literature, extracted and categorized the causes of noncompliance behaviors with Bar Code Medication Administration (BCMA) system
  – Reference: [J5]

Weapon Systems Lab 06/2011 – 05/2012
Department of Weapon Systems and Mechanical Engineering
Korea Military Academy

- A Study on Acquisition Methods of Next Generation Mine Detector and Project Strategy
  – Supported by Defense Acquisition Program Administration of Korea

User Interface Lab 03/2007 – 08/2010
Department of Industrial Systems and Information Engineering
Korea University

▮ Development of Optimization Technology for Safety Monitoring Systems in the Urban Railway Station
– Supported by the Korea Railway Research Institute
– Conducted Work Domain Analysis (WDA) and extracted information requirements for Ecological Interface Design (EID) of safety monitoring systems in the urban railway station
– Reference: [J4]

▮ Fundamental Studies for Acquisition of Digital Information
– Supported by the Ministry of Science and Technology of Korea
– Reviewed information visualization techniques and their applications to improve computer forensic data analysis
– References: [C4] and [J3]

▮ Development of Next-generation Vehicle Interface through Ecological Interface Design (EID)
– Supported by NGV of Hyundai Motor Group
– Conducted Work Domain Analysis (WDA) and extracted information requirements
– Designed Ecological Interface Design (EID) for a lane change support display
– References: [C5] and [P1]

▮ The Mobile Phone's Optimal Vibration Frequency in Mobile Environment
– Supported by Samsung Electronics
– Conducted empirical experiments to evaluate the perception of vibrotactile stimuli in mobile environments

▮ Measuring Presence in Mobile 3D
– Supported by the Small and Medium Business Administration of Korea
– Conducted empirical experiments to evaluate situation awareness of subjects who played a mobile phone 3D game

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Publications

Journal Papers

[J7] **Sukwon Lee**, Sung-Hee Kim, Ya-Hsin Hung, Heidi Lam, Youn-ah Kang, and Ji Soo Yi (2016). How do People Make Sense of Unfamiliar Visualizations?: A Grounded Model of Novice's Information Visualization Sensemaking. *IEEE Transactions on Visualization and Computer Graphics, 22*(1), 499-508.

[J6] Bum Chul Kwon, Sung-Hee Kim, **Sukwon Lee**, Jaegul Choo, Jina Huh, and Ji Soo Yi (2016). VisOHC: Designing Visual Analytics for Online Health Communities. *IEEE Transactions on Visualization and Computer Graphics, 22*(1), 71-80.

[J5] Byung Cheol Lee, **Sukwon Lee**, Bum Chul Kwon, and Ji Soo Yi (2015). What are the Causes of Non-compliance Behaviors in Bar Code Medication Administration System Process? *International Journal of Human-Computer Interaction, 31*(4), 227-252.

[J4] **Sukwon Lee**, Bong Geun Lee, Jiseung Back, Seongsik Jo, and Rohae Myung (2010). Applying Work Domain Analysis for Ecological Interface Design of Safety Monitoring Systems in the Urban Railway Station. *Journal of the Korean Society for Railway, 13*(3), 264-270.

[J3] Jun-Woo Bae, **Sukwon Lee**, In-Soo Kim, and Rohae Myung (2009). A Research for New Taxonomy of Information Visualization. *Journal of the Society Korea Industrial and Systems Engineering, 32*(2), 76-84.

[J2] **Sukwon Lee** and Rohae Myung (2009). A Study of Trajectory Mapping Method as a User Interface Design Tool for Mobile Devices. *IE Interfaces, 22*(1), 17-25.
★ Best Paper Award in 4th KIIE Master's Student Research Paper Competition

[J1] **Sukwon Lee** and Rohae Myung (2007). Prediction of Mobile Phone Menu Selection with Markov Chains. *Journal of the Korean Institute of Industrial Engineers, 33*(4), 402-409.
★ Best Paper Award in 3rd KIIE Master's Student Research Paper Competition

Conference Papers

[C6] **Sukwon Lee** and Rohae Myung (2008). A Study of Trajectory Mapping Method as a User Interface Design Tool for Mobile Devices. *2008 Fall Conference of the Korean Institute of Industrial Engineers*. Seoul, Korea.

[C5] **Sukwon Lee**, Taek Su Nam, and Rohae Myung (2008). Work Domain Analysis for Ecological Interface Design of Vehicle Control Display. *9th WSEAS International Conference on Automation and Information*. Bucharest, Romania.

[C4] Yoon Seok Jung, **Sukwon Lee**, Byung Don Kong, Seongsik Jo, In-Soo Kim, and Rohae Myung (2008). A Study of Information Visualization for Effective Computer Forensic Investigation. *2008 Spring Conference of Ergonomic Society of Korea*. Daegu, Korea.

[C3] **Sukwon Lee**, Rohae Myung, and In-Soo Kim (2008). Development of Mobile Phone Menu Structure Based on Visual Concept Map. *2008 Conference of HCI Korea*. Pyeongchang, Gangwon-Do, Korea.

[C2] **Sukwon Lee** and Rohae Myung (2007). Using Markov Chains for Predicting Mobile Phone Menu Selection in a Adaptive User Interface. *2007 Fall Conference of the Korean Institute of Industrial Engineers*. Seoul, Korea.

[C1] **Sukwon Lee**, Rohae Myung, and Hong-Chul Lee (2007). Human Behavioral Model in Menu Selection Using Hidden Markov Chain. *INFORMS (Institute for Operations Research and the Management Sciences) International Meeting 2007*. Rio Grande, Puerto Rico.

Working Papers

[W2] Sung-Hee Kim, **Sukwon Lee**, and Ji Soo Yi. Understanding the Role of Visualizations on Decision Making: A Study on Working Memory.

[W1] Sung-Hee Kim, **Sukwon Lee**, Min Lee, Jeongjoon Boo, and Ji Soo Yi. Do You Get It? Crowdsourced Workers' Visualization Comprehension of Eight Visualizations.

Posters

[PO2] **Sukwon Lee**, Sung-Hee Kim, Ya-Hsin Hung, Heidi Lam, Youn-ah Kang, and Ji Soo Yi (2015). How do People Make Sense of Unfamiliar Visualization? A Grounded Model of Novice's Information Visualization Sensemaking. *2015 IE GSO Industrial Engineering Research Symposium, Purdue University.* West Lafayette, IN.
★ Audience Choice Poster Award

[PO1] Sung-Hee Kim, **Sukwon Lee**, Min Lee, Jeongjoon Boo, and Ji Soo Yi (2014). Do You Get It? Crowdsourced Workers' Visualization Comprehension of Eight Visualizations. *2014 IE GSO Industrial Engineering Research Symposium, Purdue University.* West Lafayette, IN.

Book

[B1] Sang Kil Lee, Baek-Ki Jung, Dong-Yoon Chung, Gun-In Kim, Sung Hoon Choi, Hyun Dal Yoon, Wonseok Tae, and **Sukwon Lee** (2011). New Weapon Systems (3rd edition). *Cheong Moon Gak Publisher*. (ISBN: 9788963640846)

Patent

[PA1] Dong Seok Lee, Rohae Myung, Seung-Kweon Hong, Junghwan Kim, Taek Su Nam, **Sukwon Lee**, and Junchae Lim (2009). Display Method to Support Lane Change. *The Korean Intellectual Property Office*. (Patent No. 10-0882846)

Activities

Workshop Organizer

▮ 2014 VisLit Workshop: Towards An Open Visualization Literacy Testing Platform 11/2014
– IEEE VIS 2014, Paris, France
– Co-organized with Sung-Hee Kim, Jeremy Boy, Niklas Elemqvist, and Ji Soo Yi

Conference Student Volunteer

- IEEE VIS 2015, Chicago, IL, USA 10/2015
- IEEE VIS 2014, Paris, France 11/2014
- IEEE VIS 2013, Atlanta, GA, USA 10/2013

Extracurricular Activities

- President of the Korean Student Association (PKIE: Purdue Korean Industrial Engineers) in School of Industrial Engineering at Purdue University 08/2013 – 07/2014
- SURF (Summer Undergraduate Research Fellowships) Graduate Mentor 05/2013 – 08/2013
  – Jeongjoon Boo (Undergraduate student, Purdue University)
- Field Training at 1st Division of Republic of Korea Army 08/2010
- Member of Korea University Snowboard Team (FLIP) 03/2003 – 02/2009
  – President from 03/2005 to 02/2006
  – Led the team to second-place finish in 2006 University Federation Snowboarding Competition

Honors and Awards

- Audience Choice Poster Award 04/2015
  – 2015 IE GSO Industrial Engineering Research Symposium Poster Contest, Purdue University
- Graduate Student Mentor Award 08/2013
  – 2013 Summer SURF (Summer Undergraduate Research Fellowships), Purdue University
- Excellence in Education Award 05/2012
  – 2011 Academic Board Evaluation, Korea Military Academy
- The Second-place Best Paper Award 11/2008
  – 4th KIIE Master's Student Research Paper Competition, KIIE (Korean Institute of Industrial Engineers)
  – Reference: [J2]
- Research Assistant Scholarship 03/2008
  – Korea University
- The First-place Best Paper Award 11/2007
  – 3rd KIIE Master's Student Research Paper Competition, KIIE (Korean Institute of Industrial Engineers)
  – Reference: [J1]
- General Scholarships 09/2008, 03/2008
  – Korea University 09/2007
- The Second Stage of Brain Korea 21 (BK21) Scholarship 03/2007
  – Korea University
- Semester High Honors 09/2006, 09/2005
  – Korea University
- Honors Scholarships 03/2006, 03/2004
  – Korea University
- Special Scholarships 09/2004
  – Korea University
- Freshmen Special Scholarships 03/2003
  – Korea University