

# Sung Pil Moon

# Curriculum Vitae

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## RESEARCH INTEREST

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My research lies in Human-Computer Interaction (HCI), with primary interests in human behavior (e.g., motivation, behavior change and decision-making), usability and user experience, and interactive system design in conjunction with information visualization and persuasive elements. In particular, my research interest focuses on creating useful and effective information visualization applications (both web and mobile),

- To provide users of the application more engaged and sustainable motivation to change their health behaviors
- To provide decision-ready visualized options for decision makers (including emergency responders, healthcare professional and patients) for more accurate and confident decision by reducing their cognitive burden in dynamic and uncertain situations and by visualizing cause and effect relationships interactively.
- To help aware of local health-related trends by showing meaningful and analytical visualized information extracted from social media data (e.g., Twitter, and Facebook)

## EDUCATION

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### Ph.D. in Human-Computer Interaction

May 2015

School of Informatics, Indiana University, Indianapolis, IN

- Dissertation title: Hamkerun: Mobile infoVis app towards sustainable motivation in a context of running.

### Master of Information Technology in eBusiness

Aug. 2006

School of Computer Science, Carnegie Mellon University, Pittsburgh, PA

### Bachelor of Science in Computer Engineering

Feb. 2004

Soongsil University, Seoul, Korea Republic

## RESEARCH & PROFESSIONAL EXPERIENCE

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### Data Scientist Fellow, NYC Data Science Academy, New York, NY

- Data Science Job Analyzer project Sep. 2012 – Aug. 2013
  - Implemented the interactive cluster and sentiment analyses of web-scraped job data from indeed.com and dice.com using Python, R and Shiny Dashboard.
- Data Scientist Salary Comparator project Sep. 2008 – Mar. 2011
  - Implemented interactive data scientist salary comparator against other eight professions in the US using R and Shiny Dashboard (based on 167,278 prevailing wage data from US Department of Labor).
- Kaggle BNP Paribas Cardif competition project Sep. 2008 – Mar. 2011
  - Participated in the competition to predict category of user claims based on features available from a large data (30~40% missing and anonymized) in the early process using supervised learning methods.
- DataSci4Good project Nov. 2011 – June 2012
  - Implemented the improved visualization and embedded recommendations component to the Wise shiny app designed for young people to develop financial literacy utilizing Shiny, Python and several machine learning methods.

### Graduate Research Assistant, Indiana University, Indianapolis, IN

- Patient empowerment with shared decision space project Sep. 2012 – Jan. 2013
  - Develop a decision-making tool to enable both doctor and patient to attain shared decision space, deeper levels of option awareness and choose a robust option via information visualizations of the decision space.
  - Funded by MITRE research Corporation ([www.mitre.org](http://www.mitre.org))
  - Project number: 51MSR605-BA and 51MSR603-AA Nov. 2012 – Feb. 2013
  - Took a role for UI/UX design, data extraction and visualization, front-end development and usability testing
- GRAPPA decision space information development project Nov. 2006 – May 2008
  - Developed a decision space information visualization tool which is a model-based simulator to aid first emergency responder providing visualization of multiple decision options for more accurate and confident decisions.
  - Funded by MITRE research Corporation ([www.mitre.org](http://www.mitre.org))
  - Project number: 43MSR001-EA, 45MSR026-FA
  - Took a role for UI/UX design, front-end side development and usability

- Top Health Trends project
  - Developed an information visualization tool showing local health-related Twitter trends to aid daily jobs of health-related experts.
  - Collaborated with MESH coalition ([www.meshcoalition.org](http://www.meshcoalition.org))
  - Took a main role in UI/UX design, front-end development, collecting requirements, and conducting usability tests
- ANRORA (Aural Navigation Flow On Rich website Architecture) project
  - A NSF-funded project investigating linkless navigation strategy as a new way to increase mobile user experience while on-the-move.
  - Developed an interactive mobile prototype (both in high fidelity and android version) and conducted usability tests.
- MARVAND project
  - Developed a mobile application supporting disaster relief activities for onsite volunteers after natural disaster.
  - Took a main role in developing UI, front-end side, collecting user / system requirements, and conducting usability tests

#### **Teaching Assistant, Carnegie Mellon University, Pittsburgh**

- Robot to the Rescue (RttR) class, Institute for Software Research (ISR)
  - Led a course and offered a guidance of general introduction of robotics, and developed a simulator with C#-based Microsoft Robotics Studio framework to communicate between mechanical devices and simulation services

## **PUBLICATIONS AND POSTERS**

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### **Publications**

Moon, S. P. (2015). Hamkerun: Mobile infoVis app towards sustainable motivation in a context of running (Doctoral dissertation, Indiana University).

Moon, S. P., Liu, Y., Entezari, S., Pirzadeh, A., Pappas, A., & Pfaff, S. M. (May, 2013). Top Health Trends: An information visualization tool for awareness of local health trends. *10th International Conference on Information Systems for Crisis Response and Management (ISCRAM'13)*. Baden-Baden, Germany, May 12-15.

Pfaff, M. S., Klein, G. L., Drury, J. L., Moon, S. P., Liu, Y., & Entezari, S. O. (2012). Supporting complex decision making through option awareness. *Journal of Cognitive Engineering and Decision Making*, Advance online publication. doi: 10.1177/1555343412455799

Liu, Y., Moon, S. P., Pfaff, M. S., Drury, J. L., & Klein, G. L. (2011). Collaborative option awareness for emergency response decision making. Paper presented at the 8th Annual International Conference on Information Systems for Crisis Response and Management (ISCRAM), Lisbon, Portugal, May 2011.

Pfaff, M. S., Drury, J. L., Klein, G. L., More, L. D., Moon, S. P., & Liu, Y. (2010). Weighing decisions: Aiding emergency response decision making via option awareness. Proceedings of the 2010 IEEE International Conference on Technologies for Homeland Security (HST), 251-257.

## Posters

Moon, S. P., Liu, Y., and Powit, R. (2013, April). MARVAND: Mobile application for relief volunteering activity after natural disaster. Poster presented at the IUPUI Research Day 2013, Indianapolis, IN.

Bolchini, D., Rohani Ghahari, R., George-Palilonis, J., Moon, S.P., Archibald, C., & Kaser, L. (2012, November). Eyes-free web browsing with linkless navigation. IUPUI Innovation to Enterprise Showcase & Forum, IUPUI Campus Center, Indianapolis (IN), November 28, 2012.

Pfaff, M.S., Liu, Y., Moon, S. P., Entezari, S. O (2012, May). Effects of human-computer trust on collaborative decision making in a simulated emergency response. Poster presented at the 24th Annual Convention of the Association for Psychological Science, Chicago, IL.

Pfaff, M.S., Moon, S. P., & Liu, Y. (2010, April). The GRaPPa lab: Supporting team decision making in complex environments. Poster presented at the IUPUI Research Day, Indianapolis, IN.

Luther, J., Moon, S. P., Davide, D., & Faiola, A. (2009, November). Advancing paper-in-screen prototyping: Evaluating and interacting with digital sketched designs. Presented at 2009 Indiana World Usability Day, Indianapolis, IN.

## HONORS AND AWARDS

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| <b>Graduate Research Assistantship, Indiana University, Indianapolis</b>                    | 2008 - 2014 |
| <b>Scholarship for Talented Alumni Student from Soongsil University, Seoul, Korea</b>       | 2012 – 2013 |
| <b>Scholarship for Talented Student, Ministry of Commerce, Industry and Energy of Korea</b> | 2005 – 2006 |

## **SKILLS (HCI, STATISTICS AND PROGRAMMING)**

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### **Design Methods**

User-centered design, participatory design, ideation, affinity diagramming, scenarios, personas, information architecture, experience prototyping, technology probes

### **User Research**

Ethnography, contextual inquiry, focus group, experience sampling method, usability testing, heuristic analysis, GOMS, cognitive walkthrough, wizard of OZ, survey design & data analysis

### **Prototyping**

Sketching, low/mid/high fidelity prototyping, paper prototyping, experience prototyping, Flash, Photoshop, Balsamiq, Fluid UI

### **Development**

Python (scikit-learn, numpy, scipy, pandas, matplotlib, seaborn, etc.), R (data manipulation & visualization: Shiny, ggplot, dplyr, knitr, caret, rpart, etc.), SQL, Hadoop (MapReduce, Hive), GitHub, Java, Javascript, HTML5 / CSS, Android Mobile, jQuery Mobile, Adobe Flex web / mobile programming (Actionscript)

### **Statistics and Machine Learning**

Linear and Logistic regression, Generalized linear models, Feature selection & engineering, K-Nearest Neighbors, Principal Component Analysis (PCA), Lasso & Ridge Regression, K-means clustering, Hierarchical clustering, Classification and Regression trees, Decision trees, Random forests, Support vector machines, Associations Rule, Naïve Bayes, Gradient Boosting Machines (GBM), XGBoost, Neural Networks, Time series models

## **PATENT**

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### **System and Method for Producing Video Map**

Application No: US20100077307 A1 (published on March 25, 2010)