Curriculum Vitae

# Sunghoon Lim, Ph.D.

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## Research Interests

**Topics** (Unstructured) Data Mining, Machine Learning, Artificial Intelligence (AI), Natural Language Processing / Text Mining, Social Network Analysis

**Applications** Customer Feedback Analysis Using Online Data, Healthcare, Manufacturing, Finance, Online Learning

## Academic Appointments

Aug. 2018 – Present **Assistant Professor**, School of Management Engineering
**Affiliate Assistant Professor**, School of Business Administration
Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea

## Education

Jan. 2014 – May 2018 **Ph.D.** Industrial Engineering
The Pennsylvania State University, University Park, Pennsylvania, United States
(Advisor: Dr. Conrad S. Tucker)
Dissertation Title: EVENT DETECTION AND PREDICTION USING ONLINE USER GENERATED DATA
Dissertation Committee: Dr. Conrad S. Tucker, Dr. Soundar Kumara, Dr. Ling Rothrock, Dr. Nilam Ram

Aug. 2012 – Dec. 2013 **M.S.** Industrial Engineering
The University of Pittsburgh, Pittsburgh, Pennsylvania, United States

Mar. 2006 – Jan. 2009 **M.S.** Industrial Engineering
KAIST, Daejeon, Republic of Korea

Mar. 2001 – Aug. 2005 **B.S.** Industrial Engineering
KAIST, Daejeon, Republic of Korea

## Peer-reviewed Journal Publications

**Lim, Sunghoon**, Conrad S. Tucker, Kathryn Jablokow, and Bart Pursel. "A semantic network model for measuring engagement and performance in online learning platforms" *Computer Applications in Engineering Education* 26, no. 5 (2018): 1481-1492.

Tuarob, Suppawong, **Sunghoon Lim**, and Conrad S. Tucker. "Automated Discovery of Product Feature Inferences within Large Scale Implicit Social Media Data." *Journal of Computing and Information Science in Engineering* 18, no. 2 (2018): 021017.

**Lim, Sunghoon**, and Conrad S. Tucker. "Mitigating Online Product Rating Biases Through the Discovery of Optimistic, Pessimistic, and Realistic Reviewers." *Journal of Mechanical Design* 139, no. 11 (2017): 111409.

**Lim, Sunghoon**, Conrad S. Tucker, and Soundar Kumara. "An unsupervised machine learning model for discovering latent infectious diseases using social media data." *Journal of Biomedical Informatics* 66 (2017): 82-94.

**Lim, Sunghoon**, and Conrad S. Tucker. "A Bayesian Sampling Method for Product Feature Extraction From Large-Scale Textual Data." *Journal of Mechanical Design* 138, no. 6 (2016): 061403.

## Peer-reviewed Journal Publications Under Review

**Lim, Sunghoon**, and Conrad S. Tucker. "Mining Twitter Data for Causal Links between Tweets and Real World Outcomes." *Decision Support Systems* (Under Review).

## Peer-reviewed Conference Proceedings

**Lim, Sunghoon**, Conrad S. Tucker, Kathryn Jablokow, and Bart Pursel. "Quantifying the Mismatch between Course Content and Students' Dialogue in Online Learning Environments." In *ASME 2017 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, American Society of Mechanical Engineers, 2017. (**Design Education (DEC) Technical Committee Best Paper**)

## Research Grants

Nov. 2018 – Oct. 2021 "A Study on Trend Analysis of Customers and Competitors for the Enhancement of the Competitiveness of Local Manufacturers in Industry 4.0: Trend Analysis Model Development Based on Unstructured Big Data Analysis and Artificial Intelligence (AI)" (Principle Investigator), Ulsan National Institute of Science and Technology (UNIST)

## Honors and Awards

Nov. 2017 **Completion Certificate**, *Course in College Teaching*, The Schreyer Institute for Teaching Excellence, The Pennsylvania State University

Aug. 2017 **Design Education (DEC) Technical Committee Best Paper Award ($1,000)**, *ASME 2017 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*

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| Dec. 2016 | **Certificate of Award**, Penn State CHOT (The Center for Health Organization Transformation) |
| Aug. 2016 – May 2018 | **CHOT Scholar**, Penn State CHOT (The Center for Health Organization Transformation) |
| Mar. 2006 – Dec. 2008 | **Government Scholarship**, KAIST, Republic of Korea |
| Mar. 2001 – Dec. 2004 | **Government Scholarship**, KAIST, Republic of Korea |

## Research Experience

**The Pennsylvania State University**

Oct. 2016 – May 2018 **Penn State CHOT Scholar,** *Phase 2: I/UCRC for Center for Healthcare Organization Transformation (CHOT),* (Sponsor: National Science Foundation).

Jul. 2014 – Jul. 2016 **Graduate Student Researcher,** *"Wellness Without Borders": Penn State's Self-Organizing, Connected Wellness Network,* (Sponsor: Penn State Global Engagement Network).

**The University of Pittsburgh**

Sep. 2012 – Aug. 2013 **Graduate Student Researcher,** *The Vaccine Modeling Initiative,* (Sponsor: Bill & Melinda Gates Foundation).

**KAIST**

Mar. 2006 – Dec. 2006 **Graduate Student Researcher,** *Mathematical Modeling for Boundary Effects,* (Sponsor: Agency for Defense Development, Republic of Korea).

## Teaching Experience

**Ulsan National Institute of Science and Technology (UNIST)**

Aug. 2018 – Present **Instructor**, Management Engineering, *MGE201 Operations Research I*: Fall 2018

**The Pennsylvania State University**

Sep. 2017 – Nov. 2017 **Guest Lecturer**, Engineering Design, *EDSGN 100 Introduction to Engineering Design* (Instructor: Dr. Conrad S. Tucker): Three guest lectures in Fall 2017.

**The University of Pittsburgh**

Jan. 2013 – Apr. 2013 **Teaching Assistant**, Industrial Engineering, *IE 2001 Operations Research* (Instructor: Dr. Jayant Rajgopal): Spring 2013.

## Invited Presentations

**Lim, Sunghoon**. "A Bottom-Up Machine Learning Model for Real-Time Population Health Management Using Social Media Data." *Special Seminar*, The Department of Industrial and Management Engineering, Pohang University of Science and Technology (POSTECH), Republic of Korea, 2017.

**Lim, Sunghoon**. "Clustering-based Real-time Population Health Management Using Online User-generated Data." *IE 590: Industrial Engineering Colloquium*, The Pennsylvania State University, University Park, Pennsylvania, 2017.

**Lim, Sunghoon**, and Conrad S. Tucker. "Population Health Data Mining with a Real-time Social Network Map." *CHOT Fall Industry Advisory Board Meeting 2017*, The Center for Health Organization Transformation (CHOT), Birmingham, Alabama, 2017.

**Lim, Sunghoon**, Conrad S. Tucker, and Harriet B. Nembhard. "Sensing Systems for Personalized Telehealth Wellness Management." *2016 Fall Penn State CHOT Symposium*, The Center for Health Organization Transformation (CHOT), University Park, Pennsylvania, 2016.

Tucker, Conrad S., **Sunghoon Lim**, Yifeng Yu, and Harriet B. Nembhard. "Sensing Systems for Personalized Telehealth Wellness Management." *CHOT Spring Industry Advisory Board Meeting 2016*, The Center for Health Organization Transformation (CHOT), Houston, Texas, 2016.

## Student Supervision

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| Sep. 2018 | **Payman Eslami**, Industrial Engineering, The University of Ulsan, External Ph.D. committee member |
| Mar. 2016 – May 2017 | **Haojun Sui**, **B.S.** Computer Science and Engineering, The Pennsylvania State University, Co-advised on an undergraduate honors thesis (Schreyer Honors College) with Dr. Conrad S. Tucker<br>Honors Thesis Title: Increase Recommendation Diversity by Cluster-based Top-N Recommender |

## Professional Societies and Services

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| Membership | The American Society of Mechanical Engineers (ASME) |
| Journal Reviewer | *IEEE Access* |
| Journal Reviewer | *ASME Journal of Computing and Information Science in Engineering* |
| Journal Reviewer | *Computer Applications in Engineering Education* |
| Committee Member | Undergraduate Admissions Committee, Ulsan National Institute of Science and Technology (UNIST), 2018 |
| Organizing Committee Member | *The 4th Industrial Revolution Forum in Ulsan*, Ulsan National Institute of Science and Technology (UNIST), 2018 |

## Work Experience

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| Feb. 2009 – Jul. 2012 | Defense Agency for Technology and Quality, Seoul, Republic of Korea<br>Researcher in the Reliability Analysis Team |
| Aug. 2010 – Oct. 2010 | Raytheon Company, Tucson, Arizona, United States<br>Training Program for Reliability and Quality Control |
| Apr. 2007 – Feb. 2008 | Tokyo Institute of Technology, Tokyo, Japan<br>Researcher in the Department of Industrial Engineering and Management |