

Hogun Park

CONTACT	305 N. University Street, Lawson 2149, West Lafayette, IN 47907	e-mail: hogun@purdue.edu web: http://hogunpark.com
INTEREST	Machine Learning, Data Mining, and their Applications for Graph and Text	
EDUCATION	Purdue University , West Lafayette, IN, USA	
	Ph.D Student in Computer Science	Aug. 2013 ~ Present
	<ul style="list-style-type: none">• Advisor: Prof. Jennifer Neville• Node Classification and Link Prediction for Relational Data	
	Korea Advanced Institute of Science and Technology (KAIST) , Daejeon, Korea	
	M.S in Computer Science	Aug. 2006 ~ Aug. 2008
	<ul style="list-style-type: none">• Thesis: An Interactive Information Seeking Interface for Exploratory Search• Advisor: Prof. Sung-Hyon Myaeng	
	B.S in Computer Science and IT Business (Minor)	Feb. 2003 ~ Aug. 2006
	<ul style="list-style-type: none">• <i>Graduation with Honor – Magna cum laude (Class Rank: 2nd)</i>	
	Daegu Science High School , Daegu, Korea	Mar. 2000 ~ Feb. 2003
RESEARCH HISTORY	Purdue University , West Lafayette, IN, USA	
	<i>Research Assistant</i> , Network Learning and Discovery Lab	Aug. 2013 ~ Present
	Participating 1 project (Area: Machine Learning / Data Mining)	
	IBM Research - Almaden , San Jose, CA, USA	
	<i>Research Intern</i> , Cloud Analytics Research Team	Summer 2017 and 2018
	Completed 2 project (Area: Constraint-based Machine Learning and Relation Classification)	
	IBM Watson , Somers, NY, USA	
	<i>Research Intern</i> , Cognitive Education Team	June 2016 ~ Aug. 2016
	Completed 1 project (Area: Deep Learning for Behavior Prediction)	
	Korea Institute of Science and Technology (KIST) , Seoul, Korea	
	<i>Research Scientist</i> , Imaging Media Research Center	Dec. 2008 ~ July 2013
	Completed 5 projects (Area: Social Media Analysis, Interactive TV, and Mobile Tour)	
	Korea Advanced Institute of Science and Technology (KAIST) , Daejeon, Korea	
	<i>Research Assistant</i> , Information Retrieval/Natural Language Processing Laboratory	Mar. 2005 ~ Nov. 2008
	Completed 4 projects (Area: Text Mining and Information Retrieval)	
STANDARDIZATION ACTIVITY	United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT)	Sept. 2012 ~ June 2013
	<i>Technical Editor</i> , Destination Tour Information (DTI) Project	

PUBLICATION Machine Learning / Data Mining

- (1) A Framework for Constraint-based Machine Learning (in preperation)
- (2) Interpretable Relational Machine Learning (in preperation)
- (3) **Hogun Park**, Jennifer Neville, Graph Neural Networks for Temporal Graphs, 2018. (under review)
- (4) Jooho Kim, **Hogun Park**, Emergency Information Diffusion on Twitter, 2018. (under review)
- (5) **Hogun Park**, Jennifer Neville, Graph Convolutional Neural Network for Sparsely Labeled Graph, 2018. (under review)
1. **Hogun Park**, Hamid M. Nezhad, Learning Procedures from Text: Codifying How-to Procedures in Deep Neural Networks, Proc. of 27th the Web Conference (WWW 2018), Cognitive Computing Track, 2018.
2. **Hogun Park**, John Moore, Jennifer Neville, Deep Dynamic Relational Classifiers: Exploiting Dynamic Neighborhoods in Complex Networks, Proc. of International Workshop on Mining Actionable Insights from Social Networks in WSDM 2017, 2017.
3. **Hogun Park**, Sun-Bum Youn, Geun-Yong Lee, Heedong Ko, Trendy Episode Detection at a Very Short Time Granularity for Intelligent VOD Service, Proc. of 9th European Interactive TV Conference (EuroITV 2011), pp. 80-83. 2011.
4. Yuchul Jung, **Hogun Park**, and Sung-Hyon Myaeng, A Hybrid Mood Classification Approach for Blog Text, Proc. of 9th Pacific Rim International Conference on Artificial Intelligence (PRICAI 2006), LNAI, pp.1099-1103, 2006.

Intelligent User Interface

5. Dongmahn Seo, Suhyun Kim, **Hogun Park**, Heedong Ko, Real-time Panoramic Video Streaming System with Overlaid Interface Concept for Social Media, *Multimedia Systems*, 20, 6, pp. 707-719, 2014.
6. Dongmahn Seo, Suhyun Kim, **Hogun Park**, Heedong Ko, User Generated Highlight System for Baseball Games with Social Media Activities, Proc. of 32th IEEE International Conference on Consumer Electronics (ICCE 2014), pp. 353-354, 2014.
7. **Hogun Park**, Geun-Yong Lee, Dongmahn Seo, Sun-Bum Youn, Suhyun Kim, Heedong Ko, N-Screen Live Baseball Game Watching Platform: Novel Interaction Concepts within a Public Setting (demo), Proc. of 9th ACM European Interactive TV Conference (EuroITV 2011), pp. 13-14. 2011.
8. Sun-Bum Youn, **Hogun Park**, Geun-Young Lee, Dongmahn Seo, Suhyun Kim, Heedong Ko, Social Media-Based Three-Screen TV Service, Proc. of 29th IEEE International Conference on Consumer Electronics (ICCE 2011), pp. 920-921. 2011.
9. **Hogun Park**, Sun-Bum Youn, Eugene Hong, Changhyeon Lee, Yong-Moo Kwon, Heedong Ko, Myon-Woong Park, Young Tae Sohn, Jae Kwan Kim, Sharing of Baseball Event through Social Media (demo), Proc. of 11th ACM SIGMM International Conference on Multimedia Information Retrieval (MIR 2010), pp. 389-392, 2010.
10. **Hogun Park**, Sung-Hyon Myaeng, Gwan Jang, Jong-wook Choi, Sooran Jo, Hyungchul Roh, SketchBrain: An Interactive Information Seeking Interface for Exploratory Search, Proc. of 2nd Workshop on Human-Computer Interaction and Information Retrieval (HCIR 2008), pp. 53-56, 2008.
11. **Hogun Park**, Sung-Hyon Myaeng, Gwan Jang, Jong-wook Choi, Sooran Jo, Hyungchul Roh, An Interactive Information Seeking Interface for Exploratory Search, Proc. of 10th International Conference on Enterprise Information System (ICEIS 2008), pp. 276-285, 2008.

Cognitive Architecture for Human-Robot Interaction

12. **Hogun Park**, Yoonjung Choi, Yuchul Jung, and Sung-Hyun Myaeng, Supporting Mixed Initiative Human-Robot Interaction: A Script-based Cognitive Architecture Approach, Proc. of 21st IEEE International Joint Conference on Neural Network (IJCNN 2008), pp. 4106-4112, 2008.
13. Yuchul Jung, Yoonjung Choi, **Hogun Park**, Wookhyun Shin, and Sung-Hyon Myaeng, Integrating Robot Task Scripts with a Cognitive Architecture for Cognitive Human-Robot Interaction, Proc. of IEEE International Conference on Information Reuse and Integration (IRI 2007), pp.152-157, 2007.
14. Yuchul Jung, **Hogun Park**, Yoonjung Choi, and Sung-Hyon Myaeng, Designing a Cognitive Case-Based Reasoning Framework for Home Service Robots, Proc. of 16th IEEE International Symposium on Robot & Human Interactive Communication (RO-MAN 2007), pp.827-832, 2007.

Micellaneous Topics

15. Hyung Joo Lee, **Hogun Park**, Kwangsoon Jung, Hyoung-Gon Kim, Heedong Ko, Level-of-Detail(LOD)-based Point-of-Interest Model and its Authoring Interface, Proc. of 40th Korea Academic Society of Tourism Management, pp. 230-238. 2013.
16. Dongmahn Seo, Suhyun Kim, JaeWook Yoo, **Hogun Park**, Heedong Ko, Immersive Panorama TV Service System, Proc. of 30th IEEE International Conference on Consumer Electronics (ICCE 2012), pp. 205-206. 2012.
17. Dongmahn Seo, Suhyun Kim, YoungTae Jo, **Hogun Park**, Heedong Ko, Personal Multi-angle Media Broadcasting Service System, Proc. of 30th IEEE International Conference on Consumer Electronics (ICCE 2012), pp. 721-722. 2012.
18. Dongmahn Seo, Suhyun Kim, **Hogun Park**, Geun Young Lee, Heedong Ko, Panoramic Interface for Baseball Live with SNS, Proc. of 30th IEEE International Conference on Consumer Electronics (ICCE 2012), pp. 588-589. 2012.
19. Dongmahn Seo, Suhyun Kim, **Hogun Park**, Geun Young Lee, Heedong Ko, Overlay SNS: Next Generation Social Network Service, Proc. of 30th IEEE International Conference on Consumer Electronics (ICCE 2012), pp. 566-567. 2012.
20. Kyung-Mi Park, **Hogun Park**, Hyoung-Gon Kim, and Heedong Ko, Review Summarization Based on Linguistic Knowledge, Database Systems for Advanced Applications, *Springer*, pp. 105-114, 2012.
21. Dongmahn Seo, Suhyun Kim, **Hogun Park**, Heedong Ko, Real-time Text Scoreboard System using Social Media and Live Media, Proc. of Korea Computer Congress 2012, Volume 39, Issue 1, pp. 193-195. 2012. **[Best Paper Award]**
22. Dongmahn Seo, Suhyun Kim, **Hogun Park**, Heedong Ko, Social Network Service based on Temporal, Spatial, and Social Models, Proc. of Korea Computer Congress 2012, Volume 39, Issue 1, pp. 257-259. 2012.
23. Kyung-Mi Park, **Hogun Park**, Hyoung-Gon Kim, Heedong Ko, Review Mining Using Lexical Knowledge and Modality Analysis, Proc. of 5th International Universal Communication Symposium (IUCS 2011), pp. 215-219, 2011.
24. Kyung-Mi Park, **Hogun Park**, Hyoung-Gon Kim, and Heedong Ko, Opinion Mining on Social Media Text, Communications of the Korean Institute of Information Scientists and Engineers, Volume 29, Issue 11, pp. 54-60, 2011.
25. Kyoung-Won Park, **Hogun Park**, and Eric Fleury, Strain localization in annealed Cu₅₀Zr₅₀ metallic glass, Materials Science and Engineering: A, Volume 528, Issues 16-17, pp.5319-5326, 2011.

26. Geun-Young Lee, **Hogun Park**, Sum-Bum Youn, Dongmahn Seo, Suhyun Kim, Heedong Ko, Virtual Shared Space-based N-Screen Baseball Watching Platform, Proc. of 22nd Conference of Human and Computer Interaction (KHCI 2011), pp. 89-91, 2011.
27. Chara Park, Sang-Yun Cha, Hanju Cho, Inseong Lee, **Hogun Park**, Donghun Kang, Heedong Ko, Jinwoo Kim, How Tangible Interaction affects Users in Social Media Service : Group-based Cheering System using Nintendo Wii, Proc. of Domestic Conference on KMIS (KMIS 2009, Fall), pp. 811-816, 2009.
28. Kyoung-won Park, **Hogun Park**, Eric Fleury, Jae-Chul Lee, Permanent Deformation of Amorphous Alloys: Energy Absorption View Point Study, Proc. of the Korean Society for Technology of Plasticity Conference, pp. 424, 2009.
29. **Hogun Park**, Sung-Hyon Myaeng, Kyung-Min Kim, Gwan Jang, Jong-wook Choi, Cognitive Knowledge Structure and Information Seeking Framework to Reduce Cognitive Burden, Korean Journal of Cognitive Science, Volume 19, Issue 4, pp. 419-441, 2008.
30. Eun-Jung Choi, Jongho Won, Changseok Bae, Jin-Tae Kim, **Hogun Park**, Real-World Web Service, Weekly Tech Trend, Volume 1360, pp. 7-17, 2008.

PATENT

US Patent Pending

1. Hogun Park, Hamid M. Nezhad, Learning Procedures from Text, 2017. (To be updated)
2. Hogun Park, Hamid M. Nezhad, Predicting Next Action using Memory Neural Network, 2017. (To be updated)
3. Heedong Ko, Hyong-Gon Kim, Sangchul Ahn, Byounghyun Yoo, **Hogun Park**, and Daeil Seo, Apparatus and Method for Managing Level-of-Detail Contents, US 2014/0285526 A1, Sept. 2014.

US Patent Registered

4. **Hogun Park**, Sun-Bum Youn, and Heedong Ko, Highlight Providing System and Method based on Hot Topic Event Detection, US8738697B2, May 2014.

KR Patent Pending

5. **Hogun Park**, Daeil Seo, Hyong-Gon Kim, and Heedong Ko, Contents Media Management System and Method, 10-2013-0029617, Mar 2013.

KR Patent Registered

6. **Hogun Park**, Geun-Young Lee, Daeil Seo, Sangchul Ahn, Hyong-Gon Kim, and Heedong Ko, Panoramic Video-based Object Management System and Method, 10-1476800, Dec. 2014.
7. Dongmahn Seo, Suhyun Kim, and **Hogun Park**, Apparatus and Method for Managing Information related with Content, 10-1427711, Aug. 2014.
8. Kyung-Mi Park, **Hogun Park**, Hyong-Gon Kim, and Heedong Ko, Review Summarization System and Method, 10-1319413, Oct. 2013.
9. Dongmahn Seo, Suhyun Kim, **Hogun Park**, and Heedong Ko, Panoramic Interface for Baseball Live with Social Network Service, 10-1295002, Aug. 2013.
10. Dongmahn Seo, Suhyun Kim, Jaewook Yoo, **Hogun Park**, Heedong Ko, Yong-Tae Jo, Han-Min Bang, Geun-Young Lee, and Sun-Bum Youn, Real-time High Resolution Panorama Video Streaming & Broadcasting System, 10-1282955, July 2013.

11. Dongmahn Seo, Suhyun Kim, **Hogun Park**, and Heedong Ko, Real-time Multi-Angle Personal Media Broadcasting System for Media Jockey, 10-1242478, Mar. 2013.
12. **Hogun Park**, Sun-Bum Youn, and Heedong Ko, Highlight Providing System-based on Hot Topic Event Extraction and Highlight Service Providing Method using the Same, 10-1169377, July 2011.
13. Sung-Hyon Myaeng, Heungseon Oh, Kyung-min Kim, Jihee Ryu, Yoonjung Choi, **Hogun Park**, and Yuchul Jung, System and Method for Advertising based on Context, 10-1110022, Dec. 2011.
14. Heedong Ko, **Hogun Park**, Donghoon Kang, Jinwoo Kim, Chala Park, Seongtaek Lim, Sangyun Cha, and Hanju Cho, System for Tangible Broadcasting and Control Method using the Same, 10-1076691, Oct. 2011.
15. **Hogun Park** and Heedong Ko, A Interactive Remote Controller for IPTV Supporting Multi-angle and Panoramic Video Broadcasting, 10-1070274, Sept. 2011.
16. Sung-Hyon Myaeng, **Hogun Park**, Gwan Jang, and Yuchul Jung, Personalized Visualization Method for Supporting User's Information Search, Korea, 10- 1054050, Aug. 2011.

**RESEARCH
PROJECTS**

AT PURDUE UNIVERSITY

1. **Towards Better Modeling of Communication Activity Dynamics in Large-Scale Online Social Networks** *Research Assistant*
Aug. 2013 ~ Present
 - Funded by US National Science Foundation (NSF)
 - Role: **Relational Learning**
 - Deep learning on Large-Scale Graph for Dynamic Graph
 - Graph Convolution Neural Network with an Attention Mechanism

AT IBM RESEARCH - ALMADEN

2. **A Framework for Constraint-based Machine Learning** *Research Intern*
May 2018 ~ Aug 2018
Funded by IBM Research
 - Role: Research on Developing a Framework for Constraint-based Machine Learning
 - A framework to detect potential conflicts with given constraints and resolve them with new predictions. The work will be submitted to KDD 2019.
3. **Learning Procedural Knowledge from Text** *Research Intern*
May 2017 ~ Aug 2017
Funded by IBM Research
 - Role: Research on Learning Procedural Knowledge through Neural Network
 - Deep Neural Network Model for learning procedural knowledge was newly proposed and achieved 0.878 in accuracy for identifying procedure-specific relationship between tasks. The work was published in WWW 2018.

AT IBM WATSON

4. **Modeling and Predicting Student Behavior**

Research Intern
June 2016 ~ Aug 2016

Funded by IBM Watson

- Role: Research on Modeling and Predicting Customers' Behavior with RNN (Recurrent Neural Network)
 - Deep Knowledge Tracing Model using RNN, which is newly proposed and gets better gain in RMSE (Root Mean Square Error) than the state-of-the-art to predict the best intervention time.

AT KOREA INSTITUTUE OF SCIENCE AND TECHNOLOGY (KIST)

5. **TourCloud: Intelligent Social Tour Contents**

*Proj.Coordinator
&Researcher*

May. 2012 ~ July 2013

Cloud Platform

Funded by Korean Ministry of Culture, Sports, and Tourism

- Role: Research on Contents Crawling and Aggregation
 - **Travel Contents Search Engine** using *Apache Nutch/Solr and Drupal (PHP)*
- Role: Standardization on Destination Travel Information Process
 - Data Model of Destination Travel Information at **UN/CEFACT**

6. **Development of Tangible Social Media Platform**

Researcher
Jan. 2011 ~ July 2013

- Funded by KIST
- Role: Research on Emerging Social Media Aggregation and Broadcasting
 - **Review Mining** on Korean Text
 - Panoramic Video-based **Social Networking Interface**
: Development of Panoramic Video Player on Android
 - Exhibited in **International Consumer Electronics Show (CES 2011)**
at *Las Vegas, NV*

7. **Augmented Reality Application Framework for Tourism**

Researcher
Mar. 2009 ~ Feb. 2012

- Funded by Korean Ministry of Culture, Sports, and Tourism
- Role: Research on Mobile Context-Aware Tour Guide Platform
 - **Semantic Contents Management System Design** and Implementation
: Web-based Mobile Tour Planning System
: On-Site Guided Tour and Logging System for iPhone and Android

8. **Performance-Oriented Virtual Machine**

Project Coordinator
Mar. 2009 ~ Feb. 2012

- Funded by Korean Ministry of Knowledge Economy
- Role: Project Coordination for Midterm /Final Drafts and Evaluation
- Role: Survey on Virtual Machine Technology and Project Coordination
 - Report for Microsoft CLR and LLVM
 - Virtual Machine Standard & Patent Analysis

9. **Development of Tangible Web Platform** *Project Coordinator & Researcher*
Jan. 2009 ~ Dec. 2010

- Funded by KIST
- Role: Research on **Social TV Project** and Project Management
 - Web (flex) and Android-based Social TV System Design and Implementation
 - Semantic VOD Retrieval Service Design and Implementation (Hot Topic Extraction on Social Media)
 - Head-End Message Server Implementation
 - **User Tests** during World Baseball Classics 2009 and Korean Baseball League Final 2008-2010 for **460 users**

AT ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE (ETRI)

10. **Real-World Web Service** *Research Intern*
Mar. 2008 ~ Dec. 2008

- Funded by ETRI
- Role: Survey on **Real-World Web Service**
 - Technical Report about Related Works and Patents

AT KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)

11. **Achieving Commonsense-based Context-Awareness through Development of Korean ConceptNet** *Researcher Assistant*
May. 2005 ~ Apr. 2008

- Funded by Korea Science and Engineering Foundation (KOSEF)
- Co-project with **MIT Media Lab (Dr. Henry Lieberman)**
- Role: Research on **Commonsense Reasoning** and its Applications
 - **Mood Classification** Algorithm Design and Implementation
 - ConceptNet Reasoning Engine Optimization
 - Korean ConceptNet Construction & Evaluation

12. **Cognitive Robotics for Human-Robot Interaction** *Researcher Assistant*
Apr. 2006 ~ Apr. 2009

- Funded by KIST
- Role: Research on **Cognitive Architecture** for Human-Robot Interaction
 - Mixed-Initiative Interaction System Design and Implementation
 - Script-based Cognitive Task Reasoning System: Architecture and Script Scheme Design

13. **Metadata Extraction for Semantic Web** *Researcher Assistant*
Nov. 2007 ~ Jan. 2008

- Funded by Korea Telecom (KT)
- Role: Survey on **Text Mining** Techniques
 - Report for State-of-the-art Text Mining Techniques (150 pages)

14. **Exploiting a Large-Scale Commonsense Knowledge Base for Context-Driven Ad Placement** *Project Coordinator*
Mar. 2008 ~ Dec. 2008
- Funded by Microsoft Research (MSR)
 - Role: Research on **Contextual Advertising System** based on Commonsense
 - Commonsense-based Advertising System Design and Evaluation
 - Actionable Knowledge Detection Algorithm Design and Implementation

TEACHING EXPERIENCE 1. CS 47300: Web Information Search and Management *Teaching Assistant*
Fall Semester 2017 at Purdue University

- HONORS AND AWARDS**
1. *Fulbright* Fellowship, Institute of International Education (IIE), US, 2013 ~ 2015.
 2. Best Paper Award, Korea Computer Congress 2012, 2012.
 3. *Brain Korea 21* Scholarship, National Research Foundation of Korea (NRF), 2006 ~ 2008.
 4. Testimonial from the President of International Cooperation Agency for Korea IT (ICA), 2006.
 5. Government Fellowship, Korea Ministry of Science and Technology, 2003 ~ 2006.
 6. *4th* Place, International Robot Olympiad, International Robot Olympiad Committee (IROC), 2000.

SKILLS

Programming Languages: C/C++/C#, Java, Python, R, Matlab, Flash/Flex, JavaScript, PHP
Platform(OS): Windows/Mac OS/Unix/Linux/Android
Software Packages: Theano, Tensorflow, Keras, Weka, Mallet, iGraph, Scipy, Numpy, OpenNLP, NLTK, Berkeley Parser, Apache Lucene/Nutch/Solr, Jetty, Drupal, JQuery

LANGUAGES Korean(native), English(fluent)

- LEADERSHIP ACTIVITIES**
1. Captain, Softball Team (*CS binaries*), 2015 ~ 2016.
 2. President, Purdue Guitar Club, Purdue University, 2014 ~ 2015.
 3. President, Alumni Association of Computer Science 03', ICU, 2008 ~ 2013.
 4. Vice-President, Alumni Association of ICU, 2009 ~ 2010.
 5. President, Student Association of Computer Science, ICU, 2004 ~ 2006.
 6. Board member, Emergency Measure Committee, KAIST-ICU, 2006.
 7. Guitarist, Twenties Dream, KAIST-ICU, 2003 ~ 2005.

REFERENCES Available upon Request