Keejun Han

Researcher (Full-time), Postal & Logistics Technology Research Center
Intelligent Convergence Research Laboratory, ETRI
+82-10-4755-0362 | keejun@etri.re.kr | Google Scholar | Dblp | Linkedin

RESEARCH INTERESTS

Artificial Intelligence, NLP & Information Retrieval
- experienced to use various transfer learning AI models for implementing **actual commercial service for global smart TV users**
- made **multiple technology transfers** by developing practical AI solutions to be effectively used in industry
- developed **personalized IR & Recommender systems** by analyzing user logs or user networks

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon, Korea
Ph.D in Graduate School of Knowledge Service Engineering (advisor: Mun Y. Yi) — *Mar. 2013 – Aug. 2019*

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon, Korea
M.S in Department of Knowledge Service Engineering (advisor: Mun Y. Yi) — *Mar. 2011 – Feb. 2013*

Australian National University (ANU) — Canberra, Australia
B.S in Information Technology — *Mar. 2009 – Feb 2011*

EXPERIENCE

Intelligent Convergence Research Laboratory, ETRI — Daejeon, Korea
Researcher (Full-time) — *Mar. 2021 – Present*
- Develop a bigdata platform for UMV (Un-manned vehicle)
- Develop a bigdata management platform for postal service

Service Software Lab, Samsung Electronics — Suwon, Korea
Staff Engineer (CL3) — *Jul. 2019 – Feb. 2021*
- Developed and maintained a REST API-based contents information retrieval service for Samsung Smart TV
- Proposed and developed a deep-learning based contents information retrieval service using BERT and Elasticsearch
- Led 10 international developers from HQ and SRI-D (Samsung Research Institute-Delhi)

Knowledge Information Research Center, KAIST — Daejeon, Korea
Research Assistant — *Mar. 2011 – Jul. 2019*
- Participated in various **AI-based NLP & IR research projects** (details in Project section)
- Published various international and domestic academic papers (details in Publications section)
- Made **2 technology transfers of about 0.2 million dollars** (details in Patents section)
- Served as a teaching assistant for Knowledge Engineering and Intelligent Decision Making (KSE 643)

Intelligent Software Lab, POSTECH — Pohang, Korea
Research Intern — *Summer 2010*
- Developed a machine learning algorithm to automatically evaluate the level of writing quality for English essay
- Studied fundamental principles of Natural Language Processing (NLP) and its tools

PROJECTS

Institute of Planning and Evaluation for Technology in Agriculture (IPET) — 2018 – 2019
- Project title: Development and Validation of Smart Integrated Service Platform based on Livestock Big Data
- Served as a project manager for transferring an AI-based knowledge management platform into livestock domain
- Developed an automatic passage retrieval prototype that retrieves relevant livestock-related literature to livestock experts

Korea Evaluation Institute of Industrial Technology (KEIT) — 2015 – 2018
- Project title: Development of Experiential Knowledge Platform for Acquiring and Utilizing Experience Knowledge of Field Experts
- Served as a project manager for designing overall system architecture and integrating sub-components by exploiting REST API and NoSQL
- Developed an automatic passage retrieval service that retrieves relevant clinical literature to patients diagnosis

Institute for Information and Communications Technology Promotion (IITP) 2013 – 2015
- Project title: Exobrain (WiseKB): Bigdata based Self-evolving Knowledge Base and Reasoning Platform
- Developed a NLP algorithm to identify meaningful concepts from a document corpus
- Implemented a web crawler and ontology that collects textual big data from the web and pre-processes those in a format of RDF triple

Samsung Electronics 2013 – 2013
- Project title: Knowledge Graph Based Multimedia Contents Retrieval System
- Served as a project manager for designing overall system architecture and conducting system integration
- Implemented a JSP/Servlet-based web service prototype for movie search with MySQL
- Developed a movie search algorithm by exploiting proximity information on individual movie knowledge structure

National Research Fund (NRF) 2011 – 2014
- Project title: CourseShare: Vertical Search Engine for Education Content Search
- Served as a sub-project manager for designing and implementing UI for the education content search system
- Developed a personalized search algorithm by utilizing search user logs

National Research Fund (NRF) 2011 – 2012
- Project title: An Intelligent System of Extracting, Integrating and Searching Semi-structure Data for Better Multidisciplinary Collaboration and Document Understanding
- Developed a table extraction algorithm from academic papers
- Implemented a table detector in PDF documents

PUBLICATIONS

International Journal
- **Keejun Han**, Jungeun Kim, and Mun. Y. Yi, Search Personalization in Folksonomy by Exploiting Multiple and Temporal Aspects of User Profiles, IEEE Access 7, 95610-95619, Jul 2019 **(SCIE, IF=4.098)**
- **Keejun Han**, Hyoeun Shim, and Mun Y. Yi, A New Biomedical Passage Retrieval Framework for Laboratory Medicine: Leveraging Domain-specific Ontology, Multilevel PRF, and Negation Differential Weighting, Journal of Healthcare Engineering, Volume 2018(2018), 1-19, Dec 2018 **(SCIE, IF=1.295)**
- Hyung W. Kim, **Keejun Han**, Mun Y. Yi, Joonmyun Cho, and Jinwoo Hong, MovieMine: Personalized Movie Content Search by Utilizing User Comments IEEE Transactions on Consumer Electronics, 58(4), pp. 1416-1424, Dec 2012 **(SCIE, IF=1.157)**

International Conference
- Elizabeth Tobing, Ashraf Murtaza, **Keejun Han**, and Mun Y. Yi, EP-CapsNet: Extending Capsule Network with Inception Module for Electrophoresis Binary Classification, International Conference on Bioinformatics and Bioengineering (BIBE 2018), Oct 2018
- **Keejun Han**, Eunkyung G. Lee, Hyunwoo Je, and Mun. Y. Yi, Introducing Experiential Knowledge Platform: A Smart Decision Supporter for Field Experts, International Conference on Big Data and Smart Computing (BIGCOMP 2016), Jan 2016
- Grace E. Lee, **Keejun Han**, and Mun Y. Yi, Incorporating Distinct Opinions in Content Recommender System, The Asia Information Retrieval Societies Conference (AIRS 2015), Dec 2015
- **Keejun Han**, Juneyoung Park, and Mun. Y. Yi, Adaptive and Multiple Interest-aware User Profiles for Personalized Search in Folksonomy, International Conference on Big Data and Smart Computing (BIGCOMP 2015), Feb 2015
- Donghwan Bae, **Keejun Han**, Juneyoung Park, and Mun. Y. Yi, AppTrends: A Graph-based Mobile App Recommendation System Using Usage History, International Conference on Big Data and Smart Computing (BIGCOMP 2015), Feb 2015
- Sansung Kim, **Keejun Han**, Mun. Y. Yi, Sinhee Cho, and Seongchan Kim, Exploiting Knowledge Structure for Proximity-aware Movie Retrieval Model International Conference on Conference on Information and Knowledge Management (CIKM 2014), Nov 2014
- Seongchan Kim, Wonchul Jung, **Keejun Han**, Jae-Gil Lee, and Mun Y. Yi, Quality-based Automatic Classification for Presentation Slides, European Conference on Information Retrieval (ECIR 2014), Apr 2014
- **Keejun Han**, Junyoung Park, Donghee Hong, Jinsup Shin, and Mun Y, Yi, P-Download: A New Personalization Approach for a Content-Based Search System, International Conference on Emerging Database (EDB 2013), Aug 2013

- **Keejun Han**, Mun Y. Yi, GG Gweon, and Jae-Gil Lee, Understanding the Difficulty Factors for Learning Materials: A Qualitative Study International Conference on Artificial Intelligence in Education (AIED 2013), Jul 2013
- Seongchan Kim, **Keejun Han**, Soon Young Kim, and Ying Liu, Scientific table type classification in digital library, ACM symposium on Document engineering (DocEng 2012), Sep 2012
- Seulki Lee, Minsam Ko, **Keejun Han**, and Jae-Gil Lee, On finding fine-granularity user communities by profile decomposition, IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, Aug 2012
- Hyung W. Kim, **Keejun Han**, Minsam Ko, and Mun Y. Yi, MovMe: Personalized Movie Information Retrieval, International conference on Advances in Computing, Control & Telecommunication Technologies (ACEEE ACT 2011), Dec 2011

Patents
- Method and system for providing deep-learing based contents retrieval for smart TV, patent in application, Sep 2020 **(evaluated as A1 class in Samsung Electronics)**
- Method and system for providing biomedical passage retrieval using deep-learning based knowledge structure construction, registered number: 1020597430000, Dec 2019 **(transferred to start-up)**
- A personalized automatic literature search system for patient by using their general blood test results, registered number: 1018992500000, Aug 2018 **(transferred to start-up)**
- Method and apparatus for providing video contents search service based on knowledge structure, registered number: 1015510800000, Jul 2015
- Automatic table classification method and system based on information in table within document, registered number: 1013167800000, Oct 2013
- System for an ubiquitous online marketplace and method for communications between requesters and crowd-workers, registered number: 1012661730000, May 2013

LEADERSHIPS

University of Technology Sydney Insearch   Seoul, Korea
Lecturer   *May. 2019 – Jul. 2019*
- taught JAVA language for Korea campus students in a Australian diploma program
- consulted the students for their coursework and life in Australia

Knowledge Information Research Center, KAIST   Daejeon, Korea
Lab Leader   *Mar. 2014 – Feb. 2016*
- managed all the infrastructure and database of the lab
- fully renovated the lab homepage using HTML/CSS

Graduate School of Knowledge Service Engineering (KSE), KAIST   Daejeon, Korea
Ph.D Student Representative   *Mar. 2013 – Feb. 2014*
- launched new annual KSE events such as homecoming and sport day
- communicated between KSE faculty members and Ph.D students as student representative

International Student Department, Australian National University   Canberra, Australia
IT Officer   *Feb. 2010 – Dec. 2010*
- communicated between university and international students as international student representative in department of Information Technology
- launched international student community platform

AWARDS AND SCHOLARSHIP

Samsung Electronics Scholarship	2014 – 2018
Best Presentation Award, Korea Computer Congress	Jun. 2018
Best Paper Award, Korea Computer Congress	Jun. 2014
Best Poster Award, Emerging Databases Conference	Aug. 2012

TECHNICAL SKILLS

Languages: Korean (Native), English (Advanced Low (AL) by OPIc)
Programming Languages: Java, JSP/Servlet, Python, SQL (Postgres), JavaScript, HTML/CSS, R
Frameworks: AWS, Docker, Elasticsearch, Indri, Lucene, TensorFlow, PyTorch