

# KEUN HO RYU

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*Sex:* Male  
*Nationality:* Republic of Korea  
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13 Janggubongro, Heungduckgu, Cheongju,  
Korea (28404)

*Address (Work):*  
1 Chungdaero, Seowongu, Cheongju, Korea  
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## RESEARCH AREA

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*Databases (Especially temporal databases, spatiotemporal database), Data mining, Bioinformatics and biomedicine, temporal GIS, stream data processing, knowledgebase information retrieval, database security,*

## TEACHING EXPERIENCES, MARCH 1, 1983 ~ NOW (DECEMBER 5, 2016)

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*Database Systems, Data Mining, Big Data, Bioinformatics, Multimedia Databases  
Programming languages (C, Java, C++, R, Python, Fortran, COBOL, Assembler Language,  
and so on)*

## EDUCATIONS

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**Post-Doctor** August 1, 1989 ~ July 31, 1990  
*Depart of Computer Science,  
University of Arizona, U.S.A.*

**PhD** March 1, 1981 ~ February 29, 1988,  
*Computer Engineering  
Supervisor: Professor Kyutae Park  
Yonsei University, Republic of Korea.*

**MS** March 1, 1978 ~ October 6, 1980,  
*Computer Engineering  
Supervisor: Professor Manchun Han  
Yonsei University, Republic of Korea.*

**BS** March 1, 1972 ~ February 24, 1976  
*Computer Science  
Soongsil University, Republic of Korea.*

## WORKING EXPERIENCES

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**Professor** March 5, 1986 ~ Now (December 5, 2016),  
*Department of Computer Science,  
Chungbuk National University Republic of Korea.*

**Research Scientist (Research Staff of Department)** August 1, 1990 ~ August 31, 1991,  
*Department of Computer Science,  
University of Arizona, U.S.A.*

**Assistant Professor** March 1, 1983 ~ March 4, 1986,

*Department of Computer Science,  
Korea Correspondence National University, Republic of Korea.*  
**Researcher** August 1 ~ February 28, 1980,  
*Electronics and Telecommunications Research Institute, Republic of Korea.*  
**Army Services** February 25, 1976 ~ June 30, 1980  
*Data Processing Center, Programming Officer (Captain)  
Korean Army, Republic of Korea.*

## **ACADEMIC ACTIVITIES**

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### **Board Member:**

*2005~2016 now, Korea Information Processing Society,  
2009~2016 now, Korea Business Intelligence Data Mining Society,  
2009~2016 now, Korean Society of Remote Sensing,  
2005~2016 now, Korean Society of Computer and Information,  
2012~2016 now, Renewal Energy Standardization Committee*

### **Program Committee and Advisory Committee:**

*CIBCB 2017, FITAT 2017, ACIIDS 2017,  
HIS 2016, FITAT 2016, WICT 2016, CUTE 2016, ER 2016, DTA 2016, SERA 2016,  
CUTE 2015, IAS 2015, FITAT 2015, TSDAA 2015, SoCPaR 2015, CSA 2015, NaBIC  
2015, PDCAT 2015, CIBCB 2015, DBDM 2015, IJCNN 2015, iCAST 2015*

### **Journal Reviewer:**

*Applied Computing and Informatics, Artificial Intelligence in Medicine, American Journal  
of Cardiology, Ain Shams Engineering Journal, Biomedical Signal Processing and  
Control, Computers in Biology and Medicine, Computer Methods and Programs in  
Biomedicine, Data & Knowledge Engineering, Engineering Applications of Artificial  
Intelligence, Energy Conversion and Management, Egyptian Informatics Journal, Electric  
Power Systems Research, Expert Systems With Applications, Genomics, Information  
Sciences, Journal of Systems and Software, Knowledge-Based Systems, Osong Public  
Health and Research Perspectives, Pattern Recognition Letters, Simulation Modelling  
Practice and Theory*

## **HONORS AND AWARDS**

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- Best paper award [ICISCA 2015]: Driving Sequence Information from AAIndex for Protein Hot Spots Prediction [Li Peipei, Keun Ho Ryu]*
- Best paper award [ICICTS 2015]: Compute Unified Device Architecture based Temporal Relation Rule Mining in Large Data [Soo Ho Park, Hyun Woo Park, Ho Sun Shon, Keun Ho Ryu]*
- Best Paper Award [World IT Congress 2015]: Efficient RA-Hashed Structure for Approximate Similarity Search, [Zhou Tiehua, Wang Ling, Keun Ho Ryu]*
- Best Paper Award, [ACIT 2015]: The Design and Partial Implementation of the Dementia-aid Monitoring System Based on Sensor Network and Cloud Computing Platform [Dingkun Li, Hyun Woo Park, Minghao Piao, Keun Ho Ryu]*
- Best Paper Award [FITAT 2014]: Keyword Extraction Using Anti-pattern, [Khuyagbaatar Batsuren, Tsendsuren Munkhdalai, Meijing Li, Keun Ho Ryu]*

- *Best Paper Award [FITAT 2013]: A Novel Method for SMS Spam Filtering using Multiple Features, [Huyagbaatar Batsuren, Tsendsuren Munkhdalai, Meijing Li, Erdenetuya Namsrai, Keun Ho Ryu]*
- *Best Paper Award [FITAT 2012]: SVM based classifier for hot spots identification [Peipei Li, In Bae Oh, Keun Ho Ryu]*
- *Best Research Award [NRF] 2013, [Keun Ho Ryu]*
- *Doctor Honoris Causa [National University of Mongolia], 2011, [Keun Ho Ryu]*
- *Contribution Award [Korea Information Processing Society], 2003,2006,2009,2013, [Keun Ho Ryu]*
- *Appreciation Award [National Research Foundation of Korea], 1998,2004,2006, [Keun Ho Ryu]*
- *Excellent Fundamental Research and 50 Choice Award [National Research Foundation of Korea], 2013, [Yongjun Piao, Minghao Piao, Keun Ho Ryu]*

## **PROJECTS AND RESEARCH EXPERIENCES**

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- *PI, Production of multiomics data on T2D related target cell, Macrogen Co (company project by Korea NIH), December 1, 2015 ~ August 31, 2017*
- *PI, Data Mining for Personalized Diagnosis of Acute Myocardial Infarction based on Hybrid Marker, National Research Foundation (research project by Korean government), December 1, 2013 – November 30, 2016.*
- *Co-PI, Data ming and big data of healthcare in life style, ITRC (research project by Korean government), August 1, 2013 ~ December 31, 2016*
- *Co-PI, Self-organizing knowledge evolution technology for personalized medicine, Korea Research Foundation, PTERC (research project by Korea NRF), May 2007 – February 2014.*
- *PI, Evaluation of normalization methods for RNA-Seq data analysis and simulator development, NIH (research project by Korean NIH), January 1, 2013~July 30, 2013*
- *PI, Post Brain Project: Spatiotemporal databases and Management of USN (ubiquitous sensor network) databases, National Research Foundation (BK+, educational project by Korean government), March 1, 2013 – February 28, 2020.*
- *PI, Development on data mining technique for analysis services of U-GIS content, ETRI (research project by Korean government), September 1, 2007 – April 30, 2012.*
- *PI, Integrated data model and standard research for feature-based seamless Digital map, KLSG (research project by Korean government), September 1, 2007 – April 30, 2012.*
- *PI, Research of real-time monitoring and context processing techniques for managing new & renewable energy resources, KIER, April 2009 – December 2014.*
- *PI, Management of U-Bio information and automatic diagnosis system for prevention of diseases and disorders, BITRC (research project by Korean government), April 1, 2008 – March 31, 2011.*
- *Co-PI, Development of middleware & hardware for processing sensing data based on USN, KOTEF (research project by Korean government), May 1, 2007 - April 30, 2010.*
- *PI, A system prototype of intelligent automatic diagnosis and the prediction about cardiovascular disease, National Research Foundation (research project by Korean government), May 1, 2007 – February 28, 2010.*

## KEYNOTES AND INVITED SPEAKERS

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- Keynote speaker, *Biomedical Text Mining, (ICAITA 2016) International Conference on Artificial Intelligence Technologies and Applications, 2016, July, 2016, Thailand.*
- Invited speaker, *Biomedical and Epigenetic, (ICMLC 2016 special session), International Conference on Machine Learning and Cybernetics 2016, July, 2016, Korea.*
- Invited speaker, *special section SS2 at CIBCB 2016, CIBCB 2016, Thailand*
- Invited speaker, *Geosemantics knowledge mining model framework in social network media, (TSDAA 2015) International Workshop on Time Series Data Analysis and Its Applications, 2015, November, 2015, Japan.*
- Keynote speaker, *Biomedical text mining: Experience and practical approach, (Joint ICACIT 2015 and ACIT 2015) International Conference on Applied Computing and Information Technology 2015, July, 2015, Japan.*
- Invited speaker, *New research on biomedical and text mining, Ramkhameng University, July, 2015, Thailand.*
- Invited speaker, *Big data and biomedical text mining, (CeSGIC 2014) International Workshop on Smart Grid Technology and Data Processing, December, 2014, China.*
- Invited speaker, *Text mining: Old or trends? University of Technology, Sydney, June, 2014, Australia.*
- Keynote speaker, *Text Mining: Is it old fashion or evolution? Experience with development, (UMEDIA 2013) The IEEE International Conference on Ubi-Media Computing 2013, November, Japan.*
- Keynote speaker, *Data Mining Techniques and Herat Disease Prediction, (ICCT 2012) IEEE International Conference on Communication Technology 2012, January, 2012, Vietnam.*

## SELECTED PUBLICATIONS (1999 ~ NOW)

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**Journal Publications** (Correspondence author, Keun Ho Ryu, marked underline)

1. Hyun Woo Park, Keun Ho Ryu, Yongjun Piao, Peipei Li, Jae Shik Hong, Hee Bum Kim, Hwanwook Chung, Jeong-Kyu Hoh, and Yong Joo Kim, *Positive Effect of Baby-Friendly Hospital Initiatives on Improving Mothers' Intention for Successful Breastfeeding in Korea. Journal of Korean medical science Vol.33, No. 43, 2018. SCI IF: 1.588*
2. Musa Ibrahim, Hyun Woo Park, Lkhagvadorj Munkhdalai, and Keun Ho Ryu, *Global Research on Syndromic Surveillance from 1993 to 2017: Bibliometric Analysis and Visualization. Sustainability Vol.10, No.10, 2018. SCIE IF: 2.075*
3. Tsatsral Amarbayasgalan, Bilguun Jargalsaikhan, and Keun Ho Ryu, *Unsupervised Novelty Detection Using Deep Autoencoders with Density Based Clustering. Applied Sciences Vol.8, No. 9, 2018. SCIE IF: 1.689*
4. Dingkun Li, Hyun Woo Park, Erdenebileg Batbaatar, Lkhagvadorj Munkhdalai, Ibrahim Musa, Meijing Li, and Keun Ho Ryu, *Application of a Mobile Chronic Disease Health-Care System for Hypertension Based on Big Data Platforms." Journal of Sensors 2018. SCIE IF: 2.057*
5. Eunjoo Yang, Hyun Woo Park, Yeon Hwa Choi, Jusim Kim, Lkhagvadorj Munkhdalai, Ibrahim Musa, and Keun Ho Ryu, *A Simulation-Based Study on the Comparison of Statistical and Time Series Forecasting Methods for Early Detection of Infectious Disease Outbreaks. International journal of environmental research and public health Vol.15, No. 5, 2018. SCIE IF: 2.145*
6. Sang Hun Han, Aziz Nasridinov, Keun Ho Ryu, *Information Flow Monitoring System, IEEE Access, Vol. 6, pp. 23820-23827, 2018. SCIE IF: 3.557*

7. Byeong Mun Heo, and Keun Ho Ryu, Prediction of Prehypertension and Hypertension Based on Anthropometry, Blood Parameters, and Spirometry, *International Journal of Environmental Research and Public Health* Vol.15, No.11, 2018. **SCIE IF: 2.145**
8. Dingkun Li, Yaning Li, Zhou Ye, Musa Ibrahim, Keun Ho Ryu, Seon Phil Jeong, An Effective Risk Factor Detection and Disease Prediction (RFD-DP) Model Applied to Hypertension, *Journal of Universal Computer Science*, Vol.24, No.9, 2018. **SCIE IF: 1.066**
9. Gouchol Pok, and Keun Ho Ryu, Efficient Block Matching for Removing Impulse Noise, *IEEE Signal Processing Letters* Vol.25, No.8, 2018. **SCIE IF: 2.813**
10. Meijing Li, Xiuming Yu, Keun Ho Ryu, Sanghyuk Lee, Nipon Theera-Umpon, Face recognition technology development with Gabor, PCA and SVM methodology under illumination normalization condition, *Cluster Computing: 1-10*, 2017. **SCIE IF: 1.601**
11. Lee Gangin, Unil Yun, and Keun Ho Ryu, Mining frequent weighted itemsets without storing transaction ids and generating candidates, *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems* Vol.25, No.01, 2017. **SCIE IF: 1.159**
12. Ho Sun Shon, Sang Hun Han, Kyung Ah Kim, Eun Jong Cha, Keun Ho Ryu, Proposal reviewer recommendation system based on big data for a national research management institute, *Journal of Information Science* Vol.43, No.2, 147-158, 2017. **SCIE IF: 1.939**
13. Yong Joo Kim, Peipei Li, Jong Myeon Hong, Keun Ho Ryu, Eunwoo Nam, Mi Soo Chang, A Single Center Analysis of the Positivity of Hepatitis B Antibody after Neonatal Vaccination Program in Korea. *Journal of Korean medical science*, Vol.32, No.5, 810-816, 2017. **SCIE IF: 1.588**
14. Yongjun Piao, Seong Keon Lee, Eun-Joon Lee, Keith D. Robertson, Huidong Shi, Keun Ho Ryu, and Jeong Hyun Choi, CAME: Identification of Chromatin Accessibility from Nucleosome Occupancy and Methylome Sequencing, *Bioinformatics*, Vol.33, No. 8, 2017. **SCI IF: 5.766**
15. Yongjun Piao, Minghao Piao, Keun Ho Ryu, Multiclass cancer classification using a feature subset-based ensemble from microRNA expression profiles, *Computer Biology in Medicine*, Vol. 80, 2017. **SCI IF: 1.521**
16. Minghao Piao, Keun Ho Ryu, Local Characterization based Load Shape Factor Definition for Electricity Customer Classification, *IEEE TRANSACTIONS ON ELECTRICAL AND ELECTRONIC ENGINEERING*, Vol.12, 2017, **SCIE IF: 0.327**
17. Hyeongsu Kim, Ibrahim Musa, Minghao Piao, Taeil Kwon, Keun Ho Ryu, A Data Mining Approach for Cardiovascular Disease Diagnosis Using Heart Rate Variability and Images of Carotid Arteries, *Symmetry*, Vol.8, No.6, 2016. **SCIE IF:0.841**
18. Heungmo Ryang, Unil Yun, Keun Ho Ryu, Fast algorithm for high utility pattern mining with the sum of item quantities, (IDA) *Intelligent Data Analysis*, Vol.20, No.2, 2016. **SCIE IF: 0.94**
19. Hyung Yoon Yoon, Yong June Kim, Ji Sang Kim, Young Won Kim, Ho Won Kang, Keun Ho Ryu, RSPH9 methylation pattern as a prognostic indicator in patients with non-muscle invasive bladder cancer, (OR) *Oncology Reports*, Vol.35, No.2, 2016. **SCI IF:2.486**
20. Peipei Li, Ho Sun Shon, Yongjun Piao, Keun Ho Ryu, Comparing the normalization methods for the differential analysis of Illumina high-throughput RNA-seq data, *BMC Bioinformatics*, Vol.16, No.347, 2016. **SCIE IF: 2.435**
21. Yongjun Piao, Minghao Piao, Cheng Hao Jin, Ho Sun Shon, Buhyun Hwang, Keun Ho Ryu, A New Ensemble Method with Feature Space Partitioning for High-Dimensional Data Classification, *Mathematical Problems in Engineering*, Vol. 2016. **SCIE IF: 0.72**
22. Tsendsuren Munkhdalai, Oyun-Erdene Namsrai, Keun Ho Ryu, Self-training in significance space of support vectors for imbalanced biomedical event data, *BMC Bioinformatics*, Vol. 17, No. 7, 2015. **SCIE IF: 2.672**
23. Tsendsuren Munkhdalai, Meijing Li, Khuyagbaatar Batsuren, Hyeon Ah Park, Nak Hyeon Choi, Keun Ho Ryu, Incorporating domain knowledge in chemical and biomedical named entity recognition with word representations, *Journal of Cheminformatics*, Vol. 7, 2015. **SCIE IF: 4.540**
24. Martin Krallinger, Obdulia Rabal, Florian Leitner, Keun Ho Ryu, et al, The ChEMBL corpus of chemicals and drugs and its annotation principles, *Journal of Cheminformatics*, Vol. 7, 2015.

**SCIE IF: 4.540**

25. Tie Hua Zhou, Ling Wang, Keun Ho Ryu, Supporting Keyword Search for Image Retrieval with Integration of Probabilistic Annotation, *Sustainability*, Vol. 7, pp. 6303-6320, 2015. **SCIE IF: 1.077**
26. Kwang Sun Ryu, Hyun Woo Park, Soo Ho Park, Ho Sun Shon, Keun Ho Ryu, Dong Gyu Lee, Mohamed EA Bashir, Ju Hee Lee, Sang Min Kim, Sang Yeub Lee, Jang Whan Bae, Kyung Kuk Hwang, Dong Woon Kim, Myeong Chan Cho, Young Keun Ahn, Myung Ho Jeong, Chong Jin Kim, Jong Seon Park, Young Jo Kim, Yang Soo Jang, Hyo Soo Kim, Ki Bae Seung, Comparison of clinical outcomes between culprit vessel only and multivessel percutaneous coronary intervention for ST-segment elevation myocardial infarction patients with multivessel coronary diseases, *Journal of Geriatric Cardiology*, Vol. 12, 2015. **SCIE IF: 3.590**
27. Meijing Li, Tsendsuren Munkhdalai, Xiuming Yu, and Keun Ho Ryu, A Novel Approach for Protein-Named Entity Recognition and Protein-Protein Interaction Extraction, *Mathematical Problems in Engineering*, Vol. 1024-123X, 2015. **SCIE IF: 1.082**
28. Ling Wang, Tie Hua Zhou, Yang Koo Lee, Kyung Joo Choi, Keun Ho Ryu, An efficient refinement algorithm for multi-label image annotation with correlation model, *Telecommunication Systems*, Vol. 60, No. 2, 2015. **SCIE IF: 0.705**
29. Cheng Hao Jin, Gouchol Pok, Yongmi Lee, Hyun Woo Park, Kwang Deuk Kim, Keun Ho Ryu, A SOM clustering pattern sequence-based next symbol prediction method for day-ahead direct electricity load and price forecasting, *Energy Conversion and Management* 90, 2015. **SCIE IF: 4.380**
30. Cheng Hao Jin, Gouchol Pok, Incheon Paik, Keun Ho Ryu, Short-Term Electricity Load and Price Forecasting Based on Clustering and Next Symbol Prediction, *IEEE TRANSACTIONS ON ELECTRICAL AND ELECTRONIC ENGINEERING*, Vol. 10, 2015. **SCIE IF: 0.327**
31. Minghao Piao, Ho Sun Shon, Jong Yun Lee, Keun Ho Ryu, Subspace Projection Method Based Clustering Analysis in Load Profiling, *IEEE Transactions on Power Systems*, Vol. 29, No.6, pp. 2628-2635, 2014. **SCI IF: 3.530**
32. Ho Sun Shon, Kyung Kuk Hwang, Bae Jang Whan, Kyung Ah Kim, Jong Yun Lee, Keun Ho Ryu, N-terminal pro-B-type natriuretic peptide as prognostic marker for patients of non ST-segment elevation myocardial infarction, *Journal of Central South University* 20.8, 2013. **SCIE IF:0.520**
33. Kwan Kim, Jee Hyung Lee, Keun Ho Ryu, Ungmo Kim, A framework of spatial co-location pattern mining for ubiquitous GIS, *MULTIMEDIA TOOLS AND APPLICATIONS*, Vol. 71, No. 1, pp. 199-218, 2014. **SCIE IF: 1.965**
34. Gwangbum Pyun, Unil Yun, Keun Ho Ryu, Efficient frequent pattern mining based on Linear Prefix tree, *KNOWLEDGE-BASED SYSTEMS*, Vol.55, pp. 129-139, 2014. **SCI IF: 3.058**
35. Banage. T. G. S. Kumara, Incheon Paik, Wuhui Chen, Keun Ho Ryu, Web Service Clustering using a Hybrid Term-Similarity Measure with Ontology Learning, *INTERNATIONAL JOURNAL OF WEB SERVICES RESEARCH*, Vol.11., No. 2, pp. 24-45, 2014. **SCIE IF: 0.469**
36. Unil Yun, Gangin Lee, Keun Ho Ryu, Mining maximal frequent patterns by considering weight conditions over data streams, *KNOWLEDGE-BASED SYSTEMS*, Vol.55, pp. 49-65, 2014. **SCI IF: 3.058**
37. Unil Yun, Heungmo Ryang, Keun Ho Ryu, High utility itemset mining with techniques for reducing overestimated utilities and pruning candidates, *EXPERT SYSTEMS WITH APPLICATIONS*, Vol. 41, No 2, pp. 3867-3878, 2014. **SCIE IF: 1.965**
38. Gangin Lee, Unil Yun, Keun Ho Ryu, Sliding Window based Weighted Maximal Frequent Pattern Mining over Data Streams, *EXPERT SYSTEMS WITH APPLICATIONS*, Vol. 41, No 2, pp. 694-708, 2014. **SCIE IF: 1.965**
39. Heungmo Ryang, Unil Yun, Keun Ho Ryu, Discovering high utility itemsets with multiple minimum supports, *INTELLIGENT DATA ANALYSIS*, Vol. 18, No. 6, pp. 917-939, 2014. **SCIE IF: 0.500**

40. Li Meijing, Yu Xiuming, Keun Ho Ryu, MapReduce-based web mining for prediction of web-user navigation, *Journal of Information Science*, 2014 **SCIE IF : 1.158**
41. Mohamed Bashir, Ho Sun Shon, Dong Gyu Lee, Hyeongsoo Kim, Keun Ho Ryu, Real-Time Automated Cardiac Health Monitoring by Combination of Active Learning and Adaptive Feature Selection, *KSII Transactions on Internet and Information Systems (TIIS) 7.1*, 2013 **SCIE IF : 0.561**
42. Mohamed Bashir, Kwang Sun Ryu, Unil Yun, Keun Ho Ryu, Pro-Detection of Atrial Fibrillation Using Mixture of Experts, *IEICE transactions on information and systems 95.12*, 2012 **SCIE IF : 0.213**
43. Unil Yun, Keun Ho Ryu, Efficient mining of maximal correlated weight frequent patterns, *Intelligent Data Analysis, Vol. 17, No. 5*, pp. 1027-1047, 2014. **SCIE IF: 0.500**
44. Cheng Hao Jin, Gouchol Pok, Hyun Woo Park, Keun Ho Ryu, Improved Pattern Sequence-Based Forecasting Method for Electricity Load, *Ieej Transactions On Electrical And Electronic Engineering, Vol. 9, No. 6.*, pp. 670-674, 2014. **SCIE IF: 0.327**
45. Yong-June Kim, Hyung-Yoon Yoon, Ji Sang Kim, Keun Ho Ryu, et al., HOXA9, ISL1 and ALDH1A3 methylation patterns as prognostic markers for nonmuscle invasive bladder cancer: Array-based DNA methylation and expression profiling, *International Journal of Cancer Vol. 133, No. 5*, pp. 1135-1142, 2013. **SCI IF: 5.07**
46. Yongjun Piao, Minghao Piao, Kiejung Park, Keun Ho Ryu, An ensemble correlation-based gene selection algorithm for cancer classification with gene expression data, *Bioinformatics, Vol. 28*, pp. 3306-3315, 2012. **SCI IF 5.766**
47. Young Kwang Yeon, Jong-Gyu Han, Keun Ho Ryu, "Landslide susceptibility mapping in Injae, Korea, using a decision tree," *Engineering Geology, Vol. 116, No. 3-4*, pp. 274-283, November, 2010. **SCI, IF: 1.212**
48. Thi Hong Nhan Vu, Nam kyu Park, Yang Koo Lee, Yong mi Lee, Jong Yun Lee, Keun Ho Ryu, "Online discovery of heart rate variability patterns in mobile healthcare services," *Journal of Systems and Software, Vol. 83, No. 10*, pp. 1930-1940, October, 2010. **SCIE, IF: 1.340**
49. Ibrahim Musa Ishag, Anour F.A.Dafa-Alla, Gyeong Min Yi, Dong Gyu Lee, Myeong-Chan Cho, Jang-Whan Bae, Keun Ho Ryu, "Online multi-divisive hierarchical clustering for on-body sensor data," *Advances in Experimental Medicine and Biology, Vol. 680, No. 1*, pp. 83-88, September, 2010. **SCIE, IF: 2.020**
50. Jung Young Jin, Keun Ho Ryu, Moon Sun Shin, Sivia Nittel, "Historical index structure for reducing insertion and search cost in LBS," *Journal of Systems and Software, Vol. 83, No. 8*, pp. 1500-1511, August, 2010. **SCIE, IF: 1.340**
51. Unil Yun, Keun Ho Ryu, "Discovering important sequential patterns with length-decreasing weighted support," *International Journal of Information Technology & Decision Making, Vol. 7, No. 9*, pp. 575-599, July, 2010. **SCIE, IF: 1.312**
52. Jeong Hee Hwang, Keun Ho Ryu, "A weighted common structure based clustering technique for XML documents," *Journal of Systems and Software, Vol. 83, No. 7*, pp. 1267-1274, July, 2010. **SCIE, IF: 1.312**
53. Jung Do Choi, Vinayakumar Gedi, Chien Ngoc Pham, Keun Ho Ryu, Hyun-Sook Lee, Ga-Hye Kim, "Site-directed mutagenesis of catalytic and regulatory subunits of Mycobacterium," *Enzyme and Microbial Technology, Vol. 46, No. 3-4*, pp. 304-308, March, 2010. **SCI, IF: 2.638**
54. Vu, Thi Hong Nhan, Keun Ho Ryu, and Namkyu Park. "A method for predicting future location of mobile user for location-based services system." *Computers & Industrial Engineering 57, no. 1* (2009): 91-105. **SCIE, IF: 2.086**
55. Lee, Yong Joon, Jun Wook Lee, Duck Jin Chai, Bu Hyun Hwang, and Keun Ho Ryu. "Mining temporal interval relational rules from temporal data." *Journal of Systems and Software 82, no. 1* (2009): 155-167. **SCIE, IF: 1.424**
56. Lee, Bum Ju, Moon Sun Shin, Young Joon Oh, Hae Seok Oh, and Keun Ho Ryu. "Identification of protein functions using a machine-learning approach based on sequence-derived

- properties." *Proteome science* 7, no. 1 (2009): 1. **SCIE, IF: 1.746**
57. Sang-Hyuk Lee, Keun Ho Ryu, and Gyoyong Shon. "Study on entropy and similarity measure for fuzzy set." *IEICE transactions on information and systems* 92, no. 9 (2009): 1783-1786. **SCIE, IF: 0.41**
58. Lee, Heon Gyu, Wuon-Shik Kim, Ki Yong Noh, Jin-Ho Shin, Unil Yun, and Keun Ho Ryu. "Coronary artery disease prediction method using linear and nonlinear feature of heart rate variability in three recumbent postures." *Information Systems Frontiers* 11, no. 4 (2009): 419-431. **SCIE, IF: 1.450**
59. Lee, Sun Young, Jong Yun Lee, Kwang Su Jung, and Keun Ho Ryu. "A 9-state hidden Markov model using protein secondary structure information for protein fold recognition." *Computers in biology and medicine* 39, no. 6 (2009): 527-534. **SCI, IF: 1.521**
60. Vu, Thi Hong Nhan, Jun Wook Lee, and Keun Ho Ryu. "Spatiotemporal pattern mining technique for location-based service system." *ETRI journal* 30, no. 3 (2008): 421-431. **SCI, IF: 0.912**
61. Park, Sung-Hee, Keun Ho Ryu, and David Gilbert. "Fast similarity search for protein 3d structures using topological pattern matching based on spatial relations." *International journal of neural systems* 15, no. 04 (2005): 287-296. **SCIE, IF: 6.085**
62. Lee, Jun Wook, Ok Hyun Paek, and Keun Ho Ryu. "Temporal moving pattern mining for location-based service." *Journal of Systems and Software* 73, no. 3 (2004): 481-490. **SCIE, IF: 1.424**
63. Yun, Hyunyon, Danshim Ha, Buhyun Hwang, and Keun Ho Ryu. "Mining association rules on significant rare data using relative support." *Journal of Systems and Software* 67, no. 3 (2003): 181-191. **SCIE, IF: 1.424**
64. Kim, Dong Ho, Keun Ho Ryu, and Chee Hang Park. "Design and implementation of spatiotemporal database query processing system." *Journal of systems and software* 60, no. 1 (2002): 37-49. **SCIE, IF: 1.424**
65. Shin, Young-Ok, Sung-Kong Park, Doo-Kwon Baik, and Keun-Ho Ryu. "TATS: An efficient technique for computing Temporal aggregates for data warehousing." *ETRI journal* 22, no. 3 (2000): 41-50. **SCI, IF: 0.912**
66. Kim, Dong Ho, Keun Ho Ryu, and Young So Cho. "A new routing control technique using active temporal data management." *Journal of Systems and Software* 51, no. 1 (2000): 37-48. **SCIE, IF: 1.424**
67. Kim, Dong Ho, Keun Ho Ryu, and Hong Soo Kim. "A spatiotemporal database model and query language." *Journal of Systems and Software* 55, no. 2 (2000): 129-149. **SCIE, IF: 1.424**
68. Namsrai, Oyun-Erdene, Kwang Su Jung, Sunshin Kim, and Keun Ho Ryu. "An improved algorithm for RNA secondary structure prediction." *METHODS* 2, no. 3 (1999): 9. **SCI, IF: 3.503**

### **Conference Papers**

We published over 100 international refereed conference papers from 2010 to December 2016. Would you please refer to our web site publications on <http://dblab.chungbuk.ac.kr> three search web sites: the DBLP of "Keun Ho Ryu" in the Google, "Keun Ho Ryu" in the ACMPORTAL, and "Keun Ho Ryu" in the PubMed.