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Education

Korea University Ph.D. in Computer Science and Engineering · Advisor: Prof. Yon Dohn Chung	<i>Seoul, South Korea</i> MAR. 2014 - AUG. 2019
Korea University B.E. in Electronics and Information Engineering · On leave: SEP. 2008 - FEB. 2011, Military Service	<i>Sejong, South Korea</i> MAR. 2007 - FEB. 2014

Professional Experiences

Department of Electrical and Computer Engineering at Curtin University Research Fellow Research Associate · Project 3: A Bayesian approach to distributed estimation for multi-object systems · Project 2: An intelligent system for crime analysis and prevention based on multi-object tracking and situational awareness · Project 1: A data-driven system for privacy-preserving pandemic prevention	<i>Perth, Australia</i> NOV. 2022 - Present NOV. 2019 - NOV. 2022
Database Laboratory at Korea University Research Assistant · Project 3: A research on safe and convenient big data processing methods · Project 2: A research on privacy issues and privacy protection methods for social network services · Project 1: An intelligent system for crime detection/prevention and public security based on CCTV bigdata	<i>Seoul, South Korea</i> MAR. 2014 - AUG. 2019
School of Engineering at RMIT University Visiting Student of Dr. Du Yong Kim · Project: A research on random finite set approach to database applications	<i>Melbourne, Australia</i> JAN. 2019 - FEB. 2019
Korea Institute of Science and Technology Information (KISTI) Student Researcher · Project: Research on analysis and application platform technologies for science and technology big data	<i>Daejeon, South Korea</i> JUL. 2013 - FEB. 2014

Honors and Awards

NOV. 2022	Best Paper Award, Int. Conf. Cont., Auto. and Inf. Sci. (ICCAIS)
OCT. 2021	Best Paper Award (First Runner-Up), Int. Conf. Cont., Auto. and Inf. Sci. (ICCAIS)
SEP. 2020	Postdoctoral Fellowship (Nurturing Next-generation Researchers), National Research Foundation of Korea
FEB. 2019	KU Graduate Student Achievement Award, Korea University, Korea University
JUL. 2018	Student Paper Contest Award, Korea Computer Congress (KCC), Korea Computer Congress (KCC)
OCT. 2017	Honorable Mention Award, IEEE Visual Analytics Science and Technology (VAST Challenge)
MAY 2015	Outstanding Paper Award, Korean DataBase Conference (KDBC)

Research Interests

- Data Management, Data Mining, Signal Processing, and Machine Learning
- Query Processing, Spatio-Temporal, Graph Algorithms, and Visual Analytics
 - Bayesian Learning, Multi-Object Tracking, Graph Neural Networks, and Anomaly Detection

Publications

Technical Reports (Preprint / Under Review)

- R1** **Changbeom Shim**, Ba-Tuong Vo, Ba-Ngu Vo, Jonah Ong, and Diluka Moratuwage
“Linear Complexity Gibbs Sampling for Generalized Labeled Multi-Bernoulli Filtering”
arXiv preprint arXiv:2211.16041, Nov. 2022

International Journals

- J10** **Changbeom Shim**, Wooil Kim, Tran Thien Dat Nguyen, Du Yong Kim, Yu Suk Choi, and Yon Dohn Chung
“CellTrackVis: interactive browser-based visualization for analyzing cell trajectories and lineages”
BMC Bioinformatics, Vol 24: 124, Mar. 2023
- J9** Diluka Moratuwage, Ba-Ngu Vo, Ba-Tuong Vo, and **Changbeom Shim**
“Multi-Sensor Multi-Scan Multi-Object State Estimation”
IEEE Transactions on Signal Processing, Vol 70: 5429-5442, Oct. 2022
- J8** Cong-Thanh Do, Tran Thien Dat Nguyen, Diluka Moratuwage, **Changbeom Shim**, and Yon Dohn Chung
“Multi-object tracking with an adaptive generalized labeled multi-Bernoulli filter”
Signal Processing, Vol 196: 108532, Jul. 2022
- J7** Jonah Ong, Ba Tuong Vo, Sven Nordholm, Ba-Ngu Vo, Diluka Moratuwage, and **Changbeom Shim**
“Audio-Visual Based Online Multi-Source Separation”
IEEE/ACM Transactions on Audio, Speech, and Language Processing, Vol 30: 1219-1234, Mar. 2022
- J6** Wooil Kim, **Changbeom Shim**, and Yon Dohn Chung
“SkyFlow: A visual analysis of high-dimensional skylines in time-series”
Journal of Visualization, Vol 24(5): 1033-1050, May 2021
- J5** **Changbeom Shim**, Gyuhyeon Sim, and Yon Dohn Chung
“Cohesive Ridesharing Group Queries in Geo-Social Networks”
IEEE Access, Vol 8: 97418-97436, May 2020
- J4** Wooil Kim, **Changbeom Shim**, Wan Heo, Sungmin Yi, and Yon Dohn Chung
“Moving view field nearest neighbor queries”
Data & Knowledge Engineering, Vol 119: 58-70, Jan. 2019
- J3** **Changbeom Shim**, Wooil Kim, Wan Heo, Sungmin Yi, and Yon Dohn Chung
“Nearest close friend search in geo-social networks”
Information Sciences, Vol 423: 235-256, Jan. 2018
- J2** Sungmin Yi, **Changbeom Shim**, and Yon Dohn Chung
“Reverse View Field Nearest Neighbor Queries”
Information Sciences, Vol 402: 35-49, Sep. 2017
- J1** **Changbeom Shim**, Wooil Kim, Wan Heo, Sungmin Yi, and Yon Dohn Chung
“ ℓ -Close Range Friends Query on Social Grid Index”
IEICE Transaction on Information and Systems, Vol 100-D(4): 811-812, Apr. 2017

International Conferences

- C5** **Changbeom Shim**, Ji Youn Lee, Diluka Moratuwage, Du Yong Kim, and Yon Dohn Chung
“Generalized Label Grouping for Scalable Trajectory Estimation”
11th International Conference on Control, Automation and Information Sciences (ICCAIS), Nov. 2022
- C4** Diluka Moratuwage, **Changbeom Shim**, and Yuthika Punchihewa
“A Moving Window Based Approach to Multi-Scan Multi-Target Tracking”, **Best Paper Award**
11th International Conference on Control, Automation and Information Sciences (ICCAIS), Nov. 2022
- C3** **Changbeom Shim**, and Du Yong Kim
“Space-oriented Label Partitioning for Multi-object Tracking”, **Best Paper Award (First Runner-Up)**
10th International Conference on Control, Automation and Information Sciences (ICCAIS), Oct. 2021
- C2** Tran Thien Dat Nguyen, **Changbeom Shim**, and Wooil Kim
“Biological Cell Tracking and Lineage Inference Via Random Finite Sets”
18th IEEE International Symposium on Biomedical Imaging (ISBI), Apr. 2021

- C1** Wooil Kim, **Changbeom Shim**, Ilhyun Suh, and Yon Dohn Chung
“A Visual Explorer for Analyzing Trajectory Patterns”, **Honorable Mention Award (Challenge)**
12th IEEE Conference on Visual Analytics Science and Technology (VAST), Oct. 2017

Patents

- P2** Yon Dohn Chung, **Changbeom Shim**, and Wooil Kim
“Device for searching nearest close friends”
Oct. 2020, Korea Registration Number: 10-2172236
- P1** Yon Dohn Chung, and **Changbeom Shim**
“Device and method for recommending ride sharing group, recording medium for performing the method”
Jan. 2020, Korea Registration Number: 10-2064376

Supervisions

Ji Youn Lee Ph.D. student from Jun. 2022 under my co-supervision with Prof. Ba Tuong Vo and Prof. Ba-Ngu Vo

Teaching Experiences

Lecturer at Korea University, Seoul, South Korea

FALL 2018 COSE214: Algorithm

Teaching Assistant at Korea University, Seoul, South Korea

FALL 2017 COSE156: Python Programming

SPRING 2016 COSE213: Data Structure

FALL 2015 COSE242: Data Communication

FALL 2014 COSE102: Computer Programming

References

References are available upon request.