

Changbeom Shim, Ph.D.

4.14, New Technologies Bld. (314) ◇ Kent St, Bentley ◇ Western Australia, 6102, Australia

Research Fellow ◇ School of Elec. Eng., Comp. and Math. Sci. ◇ Curtin University

Education

Korea University

Ph.D. in Computer Science and Engineering

· *Supervisor:* Prof. Yon Dohn Chung

Seoul, South Korea

MAR. 2014 - AUG. 2019

Korea University

B.E. in Electronics and Information Engineering

· On leave: SEP. 2008 - FEB. 2011, Military Service

Sejong, South Korea

MAR. 2007 - FEB. 2014

Professional Experiences

Department of Electrical and Computer Engineering at Curtin University

Research Fellow

Research Associate

· *Supervisors:* Prof. Ba-Ngu Vo and Prof. Ba Tuong Vo

Perth, Australia

NOV. 2022 - Present

NOV. 2019 - NOV. 2022

Database Lab. at Korea University

Research Assistant

Seoul, South Korea

MAR. 2014 - AUG. 2019

School of Engineering at RMIT University

Visiting Student (*Host:* Dr. Du Yong Kim)

Melbourne, Australia

JAN. 2019 - FEB. 2019

Korea Institute of Science and Technology Information (KISTI)

Student Researcher

Daejeon, South Korea

JUL. 2013 - FEB. 2014

Funded Projects

Host: **Changbeom Shim**, Ba-Ngu Vo, Ba Tuong Vo, Hoa Van Nguyen, and Tran Thien Dat Nguyen

2024 - 2025

Partner: Yon Dohn Chung, Hyunjin Choi, and Yeonghun Chae

“Enhancing Australia-Korea emergency management capabilities”

A\$23K

Australia-Korea Foundation Grant

Australia-Korea Foundation, Department of Foreign Affairs and Trade, Australia

Changbeom Shim, Ba Tuong Vo, Youngho Kim, Jin Bum Hong, Sanjeev Arulampalam, and Du Yong Kim

2023 - 2025

“Scalable sensor fusion for 3D environmental mapping”

A\$150K

Collaborative Research Grant

Defence Science Centre, Department of Jobs Tourism Science and Innovation, Australia

Changbeom Shim

2020 - 2021

“An intelligent system for crime analysis and prevention based on multi-object tracking and situational awareness”

A\$50K

Postdoctoral Fellowship (Nurturing Next-generation Researchers)

National Research Foundation of Korea, South Korea

Host: Yon Dohn Chung

2020 - 2021

Partner: Ba-Ngu Vo, Ba Tuong Vo, Du Yong Kim, and **Changbeom Shim**

“A data-driven system for privacy-preserving pandemic prevention”

A\$60K

International Joint Research

National Research Foundation of Korea, South Korea

Supervisions

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

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)
FEB. 2020	Global Talent Independent Program (Invitation to Data Science & ICT), The Australian Government
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)
JUL. 2018	LG (Chief Technology Officer) Scholarship , LG Electronics
OCT. 2017	Honorable Mention Award, IEEE Visual Analytics Science and Technology (VAST Challenge)
MAY 2015	Outstanding Paper Award, Korean DataBase Conference (KDBC)

Publications

Technical Reports (Preprint / Under Review) † equal contribution, * corresponding author

- T2** Linh Van Ma, Tran Thien Dat Nguyen, **Changbeom Shim**, Du Yong Kim, Namkoo Ha, and Moongu Jeon
“Visual multi-object tracking with re-identification and occlusion handling using labeled random finite sets”
- T1** Hyunjin Choi, **Changbeom Shim***, Jueun Ha, Jongsub Lee, and Seung Jae Ha
“Graph Deviation Network-based Anomaly Detection for Time Series in Semiconductor Manufacturing”

International Journals

- J11** **Changbeom Shim***, Ba-Tuong Vo, Ba-Ngu Vo, Jonah Ong, and Diluka Moratuwage
“Linear Complexity Gibbs Sampling for Generalized Labeled Multi-Bernoulli Filtering”
IEEE Transactions on Signal Processing, Vol 71: 1981-1994, May 2023 (also presented in ICASSP 2024)
- 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 Transactions on Information and Systems, Vol 100-D(4): 811-812, Apr. 2017

International Conferences

- C7** Ji Youn Lee, **Changbeom Shim***, Hoa Van Nguyen, Tran Thien Dat Nguyen, Hyunjin Choi, and Youngho Kim
“Label Space Partition Selection for Multi-Object Tracking Using Two-Layer Partitioning”
12th International Conference on Control, Automation and Information Sciences (ICCAIS), Nov. 2023
- C6** Hoa Van Nguyen, Tran Thien Dat Nguyen, **Changbeom Shim**, and Marzhar Anuar
“The Smooth Trajectory Estimator for LMB Filters”
12th International Conference on Control, Automation and Information Sciences (ICCAIS), Nov. 2023
- 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

Professional Activities

- Reviewers** IEEE Trans. Signal Process., Digit. Signal Process., J. Ambient Intell. Humaniz. Comput.,
IEEE Access, Sensors, ICCAIS (2022, 2023)
- Conferences** ICCAIS 2023 (Special Session Co-Chairs)

Teaching

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.