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   *Seoul, South Korea*
Ph.D. in Computer Science and Engineering   MAR. 2014 - AUG. 2019
· *Supervisor*: Prof. Yon Dohn Chung

Korea University   *Sejong, South Korea*
B.E. in Electronics and Information Engineering   MAR. 2007 - FEB. 2014
· On leave: SEP. 2008 - FEB. 2011, Military Service

Professional Experiences

Department of Electrical and Computer Engineering at Curtin University   *Perth, Australia*
Research Fellow   Nov. 2022 - Present
Research Associate   Nov. 2019 - Nov. 2022
· *Supervisors*: Prof. Ba-Ngu Vo and Prof. Ba Tuong Vo

Database Lab. at Korea University   *Seoul, South Korea*
Research Assistant   MAR. 2014 - AUG. 2019

School of Engineering at RMIT University   *Melbourne, Australia*
Visiting Student (*Host*: Dr. Du Yong Kim)   JAN. 2019 - FEB. 2019

Korea Institute of Science and Technology Information (KISTI)   *Daejeon, South Korea*
Student Researcher   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*

Do Won Kim, and **Changbeom Shim**   2024
"Advanced Power System Asset Monitoring System on Digital Power Substation"   A\$14K
Science and Engineering Small Grant   *Curtin University, 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*

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)

Supervisions

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

Publications

† equal contribution, ∗ corresponding author

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 Younhgho 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.