

Hoseung Song

CONTACT INFORMATION Public Health Sciences Division E-mail: singhosong@gmail.com
Fred Hutchinson Cancer Research Center Web: <https://hoseungs.github.io>
1100 Fairview Ave. N., Seattle, WA 98109

RESEARCH INTERESTS Data science, Big data analysis, Nonparametric methods, Change-point analysis, Anomaly detection, Two/Multi-sample tests, Association tests, Graph-based methods, Kernel-based methods, Network analysis, Metagenomics and microbiome research, Machine learning.

EDUCATION **University of California, Davis** Davis, CA, USA
Ph.D. in Statistics 08/2021
Advisor: Dr. Hao Chen

Seoul National University Seoul, Republic of Korea
M.S. in Statistics 08/2016
B.S. in Statistics (*Minor: Mathematical Sciences*) 08/2014

WORK EXPERIENCE **Post-Doctoral Research Fellow** 09/2021 - Present
Public Health Sciences Division
Fred Hutchinson Cancer Research Center Seattle, WA, USA
Mentor: Dr. Michael C. Wu

Data Science Research Intern 06/2019 - 09/2019
Lawrence Livermore National Laboratory Livermore, CA, USA
Mentor: Dr. Jayaraman J. Thiagarajan

PUBLICATIONS **Preprints**

- Accommodating multiple potential normalizations in microbiome associations studies**
Song, H., Ling, W., Zhao, N., Plantinga, A.M., Broedlow, C.A., Klatt, N.R., Hensley-McBain, T., Wu, M.C.
- New graph-based multi-sample tests for high-dimensional and non-Euclidean data**
Song, H., Chen, H.
- New kernel-based change-point detection**
Song, H., Chen, H.
- A fast kernel independence test for cluster-correlated data**
Song, H., Liu, H., Wu, M.C.
- A fast and effective large-scale two-sample test based on kernels**
Song, H., Chen, H.
- Generalized kernel two-sample tests**
Song, H., Chen, H.

KISS Outstanding Student Paper Award (2020)

Publications

1. **Batch effects removal for microbiome data via conditional quantile regression**
Ling, W., Lu, J., Zhao, N., Lulla, A., Plantinga, A., Fu, W., Zhang, A., Liu, H., Song, H., Li, Z., Chen, J., Randolph, T., Koay, W., White, J., Launer, L., Fodor, A., Meyer, K., Wu, M.C. (2022).
Nature Communications, 13:5418.
2. **Asymptotic distribution-free change-point detection for data with repeated observations**
Song, H., Chen, H. (2022).
Biometrika, 109(3):783-798.
3. **Preventing failures by dataset shift detection in safety-critical graph applications**
Song, H., Thiagarajan, J., Kailkhura, B. (2021).
Frontiers in Artificial Intelligence, 4:589632.

HONORS & AWARDS	Graduate Student Travel Award	2020
	University of California, Davis	
	Outstanding Student Paper Award	2020
	Korean International Statistical Society	
	Statistics Department Summer Travel Award	2019
University of California, Davis		
	Summer Statistics Research Fellowship Award	2018
	University of California, Davis	
	Korea National Scholarship for Science and Engineering	2007
	Korea Student Aid Foundation	
PRESENTATIONS	Contributed Poster, Joint Statistical Meetings	2022
	Contributed Talk, ENAR, International Biometric Society	2022
	Invited Talk, Fred Hutchinson Cancer Research Center	2022
	Invited Talk, Korean International Statistical Society	2020
	Contributed Talk, Joint Statistical Meetings	2020
	Contributed Talk, Joint Statistical Meetings	2019
SOFTWARE	R package:	
	- gSeg : An R package for graph-based change-point detection.	
	- kerTests : An R package for generalized kernel two-sample tests.	
	- kerSeg : An R package for kernel-based change-point detection.	
	- gTestsMulti : An R package for graph-based multi-sample tests.	

SKILLS	R, Python, Matlab, SAS, SQL, Fortran, C, C+, LATEX	
TEACHING EXPERIENCE	Teaching Assistant	
	<i>University of California, Davis:</i>	
	<ul style="list-style-type: none"> - STA 13: Elementary Statistics (F17, W18, W21) - STA 32: Gateway to Statistical Data Science (S20) - STA 100: Applied Statistics for Biological Sciences (W17, F18, W19, SS21) - STA 103: Applied Statistics for Business and Economics (SS20) - STA 106: Analysis of Variance (F19, F20, S21) - STA 130B: Mathematical Statistics (W20) - STA 131C: Introduction to Mathematical Statistics (S19) - STA 141C: Big Data & High Performance Statistical Computing (W21) 	
	<i>Seoul National University:</i>	
	<ul style="list-style-type: none"> - STAS 019: Elementary Statistics (F14) - STAS 311: Mathematical Statistics (F15) 	
OTHER SERVICES	Vice President	09/2018 - 08/2019
	UC Davis Korean Graduate Students Association	
	Alternative Military Service	09/2011 - 08/2013
	National Health Insurance Service	Seoul, Republic of Korea