Junsouk Choi

CONTACT INFORMATION

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RESEARCH INTERESTS

Methodology: Causal discovery, graphical models, machine learning, Bayesian modeling, efficient Bayesian computation

Applications: Single-cell multi-omcis, microbiome multi-omics, precision medicine

EDUCATION

Texas A&M University, College Station, Texas, USA

- Ph.D. in Statistics — 2018 - Present
  Advisor: Professor Yang Ni

Korea University, Seoul, South Korea

- M.S. in Statistics — 2016 - 2018
  Advisor: Professor Ja-Yong Koo
- B.S. in Statistics and B.S. in Economics (Double Major) — 2010 - 2016

PUBLICATIONS

1. **Choi, J.** & Ni, Y. (2022+). Model-based Causal Discovery for Zero-inflated Count Data. *Journal of Machine Learning Research (accepted subject to minor revisions).*
2. **Choi, J.**, Lee, J., Jhong, J. H., & Koo, J. Y. (2021). Penalized I-spline Monotone Regression Estimation. *Communications in Statistics-Simulation and Computation*, 50(11), 3714-3732.
3. **Choi, J.**, Chapkin, R., & Ni, Y. (2020). Bayesian Causal Structural Learning with Zero-inflated Poisson Bayesian Networks. *Advances in Neural Information Processing Systems (NeurIPS) 33*, 5887-5897.
   [**Spotlight presentation (385 out of 9454, acceptance rate 4%)**]

SUBMITTED PAPERS

1. **Choi, J.**, Chapkin, R., & Ni, Y. Two-Sample Bayesian Causal Directed Acyclic Graphs for Observational Zero-inflated Count Data. Revision submitted to *Journal of the American Statistical Association.*
   [**Winner of the ASA Section on Bayesian Statistical Science (SBSS) student paper award**]

WORK IN PROGRESS

"Identifiable Bayesian Factor Models with Truncated Gaussian Mixture Copulas"
with Hee Cheol Chung, Irina Gaynanova, and Yang Ni

"Causal Discovery with Bayesian Truncated Copula Directed Acyclic Graphs"
with Hee Cheol Chung, Irina Gaynanova, and Yang Ni

SOFTWARE

1. ZiGDAG: an `R` package for model-based causal discovery for zero-inflated count data, available from Github
2. BayesDAG0: an `R` package for learning two-sample Bayesian causal directed acyclic graphs from observational zero-inflated count data, available from Github

3. zipbn: an `R` package for Bayesian causal structural learning with zero-inflated Poisson Bayesian networks, available from Github

Honors & Awards

Student Paper Award, ASA Section on Bayesian Statistical Science 2022

Travel Award, NeurIPS 2020 2020

Graduate Enhancement Fellowship, Texas A&M University 2018

Honors Scholarship, Korea University 2014 - 2015

Next Century Humanities Scholarship, Korea Student Aid Foundation 2011

Teaching Experience

Instructor:

Texas A&M University
STAT 302 - Statistical Methods Summer 2022

Teaching Assistant:

Texas A&M University
STAT 624 - Computing Tools for Data Science Fall 2021
STAT 626 - Methods in Time Series Analysis Summer 2021
STAT 604 - Statistical Computations Spring 2021
STAT 630 - Overview of Mathematical Statistics Fall 2020
STAT 630 - Overview of Mathematical Statistics Summer 2020
STAT 654 - Statistical Computing with R and Python Spring 2020
STAT 647 - Spatial Statistics Fall 2019
STAT 302 - Statistical Methods Spring 2019
STAT 211 - Principles of Statistics I Fall 2018

Korea University
STAT 713 - Statistical Methods in Function Estimation Fall 2017
STAT 443 - Linear Methodology Spring 2017

Presentations

Poster session, Conf. on Advances in Data Science, TAMU Oct. 2022
Two-Sample Bayesian Causal Directed Acyclic Graphs for Observational Zero-inflated Count Data

Topic-contributed session, JSM 2022, Washington, D.C. Aug. 2022
Two-Sample Bayesian Causal Directed Acyclic Graphs for Observational Zero-inflated Count Data

Contributed session, ISBA 2021, Virtual July 2021
Bayesian Causal Structural Learning with Zero-inflated Poisson Bayesian Networks

Spotlight presentation, NeurIPS 2020, Virtual Dec. 2020
Bayesian Causal Structural Learning with Zero-inflated Poisson Bayesian Networks

Invited talk, Hokkaido-Korea University Joint Conf., Sapporo, Japan Feb. 2018
Penalized I-spline Monotone Regression Estimation.

Technical Skills

- Languages: English (Proficient), Korean (Native)
- Programming: R, C/C++, Python, MATLAB