

Daeyoung Kim

Contact Information

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Education

Ph.D., Statistics, The Pennsylvania State University, PA, August 2008

- Thesis topic: Mixture inference at the edge of identifiability
- Advisor: Bruce G. Lindsay

M.S., Statistics, Korea University, Seoul, Republic of Korea, February, 2002

B.S., Statistics, Korea University, Seoul, Republic of Korea, February, 2000

Professional Experience

University of Massachusetts, Department of Mathematics and Statistics, Amherst, MA

- Professor September 2021 – present
- Associate Professor June 2015 – August 2021
(sabbatical leave in Spring 2016)
- Assistant Professor September 2008 – June 2015

Korea University, Department of Statistics, Seoul, Korea

- Guest Professor December 30, 2019 – present

Pusan National University, Department of Statistics, Pusan, Korea

- Visiting scholar February 1, 2016 – June 3, 2016

The Pennsylvania State University, Department of Statistics, University Park, PA

- Research Assistant under supervision of Dr. Bruce G. Lindsay January 2006 – August 2008
- Research Assistant under supervision of Dr. Joseph L. Schafer September – December 2003

Korea University, Department of Statistics, Seoul, Republic of Korea

- Researcher of Institute of Statistics March 2002 – July 2003

Awards and Honors

University of Massachusetts, Department of Mathematics and Statistics, Amherst, MA

- Nomination as a finalist for a 2020-21 Distinguished Teaching Award (DTA)
- College of Natural Sciences (CNS) Outstanding Teaching Award (2018)

The Pennsylvania State University, Department of Statistics, University Park, PA

- Research Assistantship (2003 – 2008)
- The Vollmer-Kleckner Graduate Fellowship (2004), for top performance on Master's exam

Korea University, Department of Statistics, Seoul, Republic of Korea

- Honors Scholarships (1997 – 1999)

- KOREA LYONS 354-C Scholarships (1999), Collegiate Honors (1999)

Research interest

Symmetric/Asymmetric dependence modeling using (sub)copulas
 Assessment of the missing data mechanism in incompletely observed categorical data
 Mixture modeling inference in heterogeneous data
 Statistical methods to estimate multidimensional inference functions
 Robust regression for contaminated data
 Interdisciplinary research on food science and environmental engineering

Publications (*: corresponding author)

Book (Statistical Methodology)

[A1] Wolfgang Wiedermann, **Daeyoung Kim**, Engin Sungur, and Alexander von Eye (2021). *Direction Dependence in Statistical Modeling: Methods of Analysis*. Hoboken, Hoboken, NJ: Wiley (<https://www.wiley.com/en-us/Direction+Dependence+in+Statistical+Modeling%3A+Methods+of+Analysis+-+p-9781119523079>)

Book Chapters (Statistical Methodology)

[B5] **Daeyoung Kim*** and Zheng Wei (2021). Analysis of asymmetric dependence for three-way contingency tables using subcopula approach. In *Direction Dependence in Statistical Modeling: Methods of Analysis*, Wolfgang Wiedermann, Daeyoung Kim, Engin Sungur, and Alexander von Eye, eds. Hoboken, NJ: Wiley, pp. 243–263

[B4] Zheng Wei*, **Daeyoung Kim**, Tonghui Wang and Teerawut Teetranont (2017). A multivariate generalized FGM copulas and its application to multiple regression. In *Robustness in Econometrics*, Kreinovich, Vladik and Sriboonchitta, Songsak and Huynh, Van-Nam, eds. Springer International Publishing, pp. 363–378

[B3] Zheng Wei, Tonghui Wang, and **Daeyoung Kim*** (2016). Multiple Copula Regression Function and Directional Dependence Under Multivariate Non-exchangeable Copulas. In *Causal Inference in Econometrics*, Van-Nam Huynh, Vladik Kreinovich and Songsak Sriboonchitta, eds. Springer International Publishing, pp. 171–184

[B2] Seongyong Kim and **Daeyoung Kim*** (2016). Directional dependence analysis using skew-normal copula-based regression. In *Statistics and Causality: Methods for Applied Empirical Research*, Wolfgang Wiedermann and Alexander von Eye, eds. Hoboken, NH: Wiley, pp. 131–152

[B1] **Daeyoung Kim*** and Bruce G. Lindsay (2011). Comparing Wald and likelihood regions, with application to locally identifiable mixture models. In *Mixture estimation and applications*, K. L. Mengersen, C. P. Robert & D. M. Titterton, eds. New York: John Wiley & Sons, pp. 77–100

Statistical Methodology Papers

[C24] Zheng Wei and **Daeyoung Kim*** (2021) On exploratory analytic method for multi-way contingency tables with an ordinal response variable and categorical explanatory variables. **Accepted to the *Journal of Multivariate Analysis***.

[C23] Zheng Wei and **Daeyoung Kim*** (2021) On partial and conditional association measures for ordinal contingency tables. *Communications in Statistics - Simulation and Computation*, <https://doi.org/10.1080/03610918.2021.1914091>

[C22] Zheng Wei and **Daeyoung Kim*** (2021) Measure of asymmetric association for ordinal con-

tingency tables via the bilinear extension copula. *Statistics and Probability Letters*, 178, 109183, <https://doi.org/10.1016/j.spl.2021.109183>

[C21] Seongyong Kim, Saebom Jeon and **Daeyoung Kim*** (2020). On log-linear modeling for an incomplete two-way contingency table with one variable subject to nonresponse. *Communications in Statistics - Simulation and Computation*, 49, 973–988

[C20] Zheng Wei, Seongyong Kim, Boseung Choi, **Daeyoung Kim*** (2019). Multivariate skew normal copula for asymmetric dependence: estimation and application. *International Journal of Information Technology & Decision Making*, 18, 365–387

[C19] Seongyong Kim and **Daeyoung Kim*** (2018). Assessment of nonignorable nonresponse log-linear models for an incomplete contingency table. *Statistica Sinica*, 28, 1887–1905

[C18] Zheng Wei and **Daeyoung Kim*** (2018). On Multivariate asymmetric dependence using multivariate skew-normal copula-based regression. *International Journal of Approximate Reasoning*, 92, 376–391

[C17] Zheng Wei and **Daeyoung Kim*** (2017). Subcopula-based measure of asymmetric association for contingency tables. *Statistics in Medicine*, 36, 3875–3894

[C16] Zheng Wei, Seongyong Kim, **Daeyoung Kim*** (2016), Multivariate skew normal copula for non-exchangeable dependence. *Procedia Computer Science*, 91, 141–150

[C15] Mark Hagemann, **Daeyoung Kim** and Mi-Hyun Park* (2016). Estimating nutrient and organic carbon loads to water-supply reservoir using semiparametric models. *ASCE Journal of Environmental Engineering*, 142 (8), [https://doi.org/10.1061/\(ASCE\)EE.1943-7870.0001077](https://doi.org/10.1061/(ASCE)EE.1943-7870.0001077)

[C14] Seongyong Kim, Yousung Park and **Daeyoung Kim*** (2015). On missing-at-random mechanism in two-way incomplete contingency tables. *Statistics & Probability Letters*, 96, 196–203

[C13] **Daeyoung Kim*** and Bruce G. Lindsay (2015). Empirical identifiability in finite mixture models. *Annals of the Institute of Statistical Mathematics*, 67, 745–772

[C12] Yousung Park, **Daeyoung Kim** and Seongyong Kim* (2014). Identification of the occurrence of boundary solutions in a contingency table with nonignorable nonresponse. *Statistics & Probability Letters*, 93, 34–40

[C11] **Daeyoung Kim** and Jong-Min Kim* (2014). Analysis of directional dependence using asymmetric copula-based regression models. *Journal of Statistical Computation and Simulation*, 84, 1990–2010

[C10] **Daeyoung Kim** and Byungtae Seo* (2014). Assessment of the number of components in gaussian mixture models in the presence of multiple local maximizers. *Journal of Multivariate Analysis*, 125, 100–120

[C9] **Daeyoung Kim**, Jong-Min Kim*, Shu-Min Liao and Yoon-Sung Jung (2013). Mixture of D-vine copulas for modeling dependence. *Computational Statistics & Data Analysis*, 64, 1–19

[C8] Byungtae Seo and **Daeyoung Kim*** (2012). Root selection in normal mixture models. *Computational Statistics & Data Analysis*, 56, 2454–2470

[C7] Yousung Park, **Daeyoung Kim*** and Seongyong Kim (2012). Robust regression using data partitioning and M-estimation. *Communications in Statistics - Simulation and Computation*, 41,

1282–1300

[C6] **Daeyoung Kim*** and Bruce G. Lindsay (2011). Modal simulation and visualization in finite mixture models. *The Canadian Journal of Statistics* 39, 421–437

[C5] **Daeyoung Kim*** and Bruce G. Lindsay (2011). Using confidence distribution sampling to visualize confidence sets. *Statistica Sinica* 21, 923–948

[C4] Bo-Seung Choi, **Daeyoung Kim**, KeeWhwan Kim, YouSung Park* (2008). Nonignorable nonresponse imputation and rotation group bias estimation on the rotation sample survey. *The Korean Journal of Applied Statistics* 21, 361–375 (in Korean)

[C3] Trent Gaugler*, **Daeyoung Kim** and Shu-Min Liao (2007). Comparing two survival time distributions: an investigation of several weight functions for the weighted logrank statistic. *Communications in Statistics - Simulation and Computation* 36, 423-435

[C2] Hyuncheol Kang* and **Daeyoung Kim** (2001). A note on the multiple comparison methods adjusting p-values in repeated measurement data. *The Applied Statistics* by The Institute of Statistics of Korea University 16, 13-26 (in Korean)

[C1] **Daeyoung Kim***, HaeJung Moon and DooWoon Yoon (1999). A study of export/import and economic growth. *Journal of The Korean Official Statistics* 4(2), 103-134 (in Korean)

Collaborative Papers

[D30] Shengmin Luo, Yongkang Wu, Yucheng Li, Dongfang Wang, **Daeyoung Kim**, Jinliang Song, Guoping Zhang* (2021) Nanoindentation-enhanced screening of hydraulic fracturing fluid additives. *International Journal of Coal Geology*, 240, 103744

[D29] Shengmin Luo, **Daeyoung Kim**, Yongkang Wu, Yucheng Li, Dongfang Wang, Jinliang Song, Don J. DeGroot, Guoping Zhang* (2021). Big data nanoindentation and analytics reveal the multi-staged, progressively-homogenized, depth-dependent upscaling of rocks' properties. *Rock Mechanics and Rock Engineering*, 54, 1501–1532

[D28] Elizabeth Isenstein, **Daeyoung Kim**, Mi-Hyun Park* (2020). Modeling for multi-temporal cyanobacterial bloom dominance and distributions using landsat imagery. *Ecological Informatics*, 59, <https://doi.org/10.1016/j.ecoinf.2020.101119>

[D27] Renalison Farias-Pereira, Zhenyu Zhang, Cheon-Seok Park, **Daeyoung Kim**, Kee-Hong Kim, Yeonhwa Park* (2020). Butein inhibits lipogenesis in *Caenorhabditis elegans*. *BioFactors*, 46, 777–787.

[D26] Yuxin Wang, Jun Yang, Weicang Wang, Katherine Z. Sanidad, Maris A. Cinelli, Debin Wan, Sung Hee Hwang, **Daeyoung Kim**, Kin Sing Stephen Lee, Hang Xiao, Bruce D. Hammock, and Guodong Zhang*(2020). Soluble epoxide hydrolase is an endogenous regulator of obesity-induced intestinal barrier dysfunction and bacterial translocation. *Proceedings of the National Academy of Sciences (PNAS) U.S.A.*, 117, 8431-8436

[D25] Ryan Carpenter, Hye Jeong Oh, In-Hye Ham, **Daeyoung Kim**, Hur Hoon, Jungwoo Lee* (2019). Scaffold-assisted ectopic transplantation of internal organs and patient-derived tumors. *ACS Biomaterials Science & Engineering*, 5, 6667–6678

[D24] Jianan Zhang, Xijing Chen, Ran Yang, Qin Ma, Weipeng Qi, Katherine Z. Sanidad, Yeonhwa

Park, **Daeyoung Kim**, Eric A. Decker and Guodong Zhang* (2019). Thermally processed oil exaggerates colonic inflammation and colitis-associated colon tumorigenesis in mice. *Cancer Prevention Research*, 12, 741–750 ([Media coverage by UMass-Amherst and Boston Globe](#))

[D23] Yiren Yue, Peiyi Shen, Amanda L Chang, Weipeng Qi, Kee-Hong Kim, **Daeyoung Kim**, Yeonhwa Park* (2019). trans-Trismethoxy resveratrol decreased fat accumulation dependent on fat-6 and fat-7 in *Caenorhabditis elegans*. *Food & Function*, 10, 4966–4974

[D22] Jason S. Yang, Weipeng Qi, Renalison Farias-Pereira, Stephanie Choi, John M. Clark, **Daeyoung Kim**, Yeonhwa Park* (2019). Permethrin and ivermectin modulate lipid metabolism in steatosis-induced HepG2 hepatocyte. *Food and Chemical Toxicology*, 125, 595–604

[D21] Weicang Wang, Jun Yang, Matthew L. Edin, Yuxin Wang, Ying Luo, Debin Wan, Haixia Yang, Chun-Qing Song, Wen Xue, Katherine Z. Sanidad, Mingyue Song, Heather A. Bisbee, Jennifer A. Bradbury, Guan-Jun Nan, Jianan Zhang, Pei-an Betty Shih, Kin Sing Stephen Lee, Lisa M. Minter, **Daeyoung Kim**, Hang Xiao, Jun-Yan Liu, Bruce D. Hammock, Darryl C. Zeldin and Guodong Zhang* (2019). Targeted metabolomics identifies the cytochrome P450 monooxygenase eicosanoid pathway as a novel therapeutic target of colon tumorigenesis. *Cancer Research*, 79(8), 1822–1830 ([Media coverage by UMass-Amherst](#))

[D20] Yuxin Wang, Weicang Wang, Haixia Yang, Katherine Z Sanidad, David Johnson, E Ilker Ozay, Weipeng Qi, Manami Ando, **Daeyoung Kim**, Lisa M Minter, Xinfeng Zhao, Xiaohui Zheng, Hang Xiao, Yeonhwa Park, Zhenhua Liu, Eric A Decker, and Guodong Zhang* (2018). Dietary intake of mildly oxidized fat increases colitis and colitis-associated colon tumorigenesis through activation of Toll-like receptor 4 (TLR4) signaling, *Current Developments in Nutrition*, 2(11), 10.1093/cdn/nzy028

[D19] Phoebe B. Chen, Ju Hyeon Kim, **Daeyoung Kim**, John M. Clark, Yeonhwa Park* (2018). Conjugated linoleic acid regulates body composition and locomotor activity in sex-dependent manners in *Drosophila melanogaster*. *Lipids*, 53, 825–834

[D18] Haixia Yang, Weicang Wang, Kymberleigh A Romano, Min Gu, Katherine Z Sanidad, **Daeyoung Kim**, Jun Yang, Birgitta Schmidt, Dipak Panigrahy, Ruisong Pei, Derek A Martin, E Ilker Ozay, Yuxin Wang, Mingyue Song, Bradley W Bolling, Hang Xiao, Lisa M Minter, Guang-Yu Yang, Zhenhua Liu, Federico E Rey, Guodong Zhang* (2018). A common antimicrobial additive increases colonic inflammation and colon tumorigenesis in mice. *Science Translational Medicine* 10(443):eaan4116 ([Media coverage by UMass-Amherst, Los Angeles Times, Popular Science, Canadian Broad-casting Corporation, Daily Mail, La Vanguardia \(Spain\)](#))

[D17] Weicang Wang, Jun Yang, Jianan Zhang, Yuxin Wang, Sung Hee Hwang, Weipeng Qi, Debin Wan, **Daeyoung Kim**, Jia Sun, Katherine Z. Sanidad, Haixia Yang, Yeonhwa Park, Jun-Yan Liu, Xinfeng Zhao, Xiaohui Zheng, Zhenhua Liu, Bruce D. Hammock, and Guodong Zhang* (2018). Lipidomic profiling reveals soluble epoxide hydrolase as a therapeutic target of obesity-induced colonic inflammation. *Proceedings of the National Academy of Sciences (PNAS) U.S.A.*, 115:5283–5288 ([Media coverage by UMass-Amherst, UC-Davis, Boston Globe, NIH/NIEHS](#))

[D16] Katherine Z Sanidad, Haixia Yang, Weicang Wang, E Ilker Ozay, Jun Yang, Min Gu, Emmet Karner, Jianan Zhang, **Daeyoung Kim**, Lisa M Minter, Hang Xiao, Guodong Zhang* (2018). Effects of consumer antimicrobials benzalkonium chloride, benzethonium chloride, and chloroxylenol on colonic inflammation and colitis-associated colon tumorigenesis in mice. *Toxicological Sciences*, 163:490–499

[D15] Xiao Xiao, Quancai Sun, Yoo Kim, Szu-Hao Yang, Weipeng Qi, **Daeyoung Kim**, Kyong Sup Yoon, John M. Clark, Yeonhwa Park* (2018). Exposure to permethrin promotes high fat diet-

induced weight gain and insulin resistance in male C57BL/6J mice. *Food and Chemical Toxicology*, 111, 405–416

[D14] Quancai Sun, Ye Peng, Weipeng Qi, Yoo kim, John M. Clark, **Daeyoung Kim**, and Yeonhwa Park* (2017). Permethrin decreased insulin-stimulated AKT phosphorylation dependent on extracellular signal-regulated kinase-1 (ERK), but not AMP-activated protein kinase α (AMPK α), in C2C12 myotubes. *Food and Chemical Toxicology*, 109, 95–101

[D13] Quancai Sun, Weipeng Qi, Xiao Xiao, Szu-Hao Yang, **Daeyoung Kim**, Kyong Sup Yoon, John M. Clark, and Yeonhwa Park* (2017). Imidacloprid promotes high fat diet-induced adiposity in female C57BL/6J mice and enhances adipogenesis in 3T3-L1 adipocytes via the AMPK α -mediated pathway. *Journal of Agricultural and Food Chemistry*, 65, 6572–6581

[D12] Xiao Xiao, Yoo Kim, **Daeyoung Kim**, Kyong Sup Yoon, John M Clark and Yeonhwa Park* (2017). Permethrin alters glucose metabolism in conjunction with high fat diet by potentiating insulin resistance and decreases voluntary activities in female C57BL/6J mice. *Food and Chemical Toxicology*, 108, 161–170

[D11] Weicang Wang, Jun Yang, Weipeng Qi, Haixia Yang, Chang Wang, Bowen Tan, Bruce D. Hammock, Yeonhwa Park, **Daeyoung Kim**, and Guodong Zhang*(2017). Lipidomic profiling of high-fat diet-induced obesity in mice: importance of cytochrome P450-derived fatty acid epoxides. *Obesity*, 25, 132-140

[D10] Weicang Wang, Jun Yang, Haixia Yang, Katherine Sanidad, Bruce Hammock, **Daeyoung Kim**, Guodong Zhang*(2016). Effects of high-fat diet on plasma profiles of eicosanoid metabolites in mice. *Prostaglandins Other Lipid Mediat.* 127:9-13

[D9] Quancai Sun, Xiao Xiao, Yoo Kim, **Daeyoung Kim**, Kyoong Sup Yoon, John M, Clark, and Yeonhwa Park*. Imidacloprid promotes high-fat diet induced adiposity and insulin resistance in male C57BL/6J mice (2016). *Journal of Agricultural and Food Chemistry*, 64, 9293–9306

[D8] Yoo Kim, **Daeyoung Kim**, and Yeonhwa Park* (2016). Conjugated linoleic acid (CLA) promotes endurance capacity via peroxisome proliferator-activated receptor δ -mediated mechanism in mice. *Journal of Nutritional Biochemistry*, 38, 125–133

[D7] Yoo Kim, **Daeyoung Kim**, Deborah J. Good, and Yeonhwa Park*(2016). Conjugated linoleic acid (CLA) influences muscle metabolism via stimulating mitochondrial biogenesis signaling in adult-onset inactivity induced obese mice. *European Journal of Lipid Science and Technology*, 118, 1305–1316

[D6] Weicang Wang, Zheyuan Du, Yoshiki Nimiya, Elvira Sukamtoh, **Daeyoung Kim**, and Guodong Zhang* (2015). Allicin inhibits lymphangiogenesis through suppressing activation of vascular endothelial growth factor (VEGF) receptor. *Journal of Nutritional Biochemistry*, 29, 83–89

[D5] Yoo Kim, **Daeyoung Kim**, Deborah J. Good, and Yeonhwa Park* (2015). Effects of post-weaning administration of conjugated linoleic acid on development of obesity in nescient basic helix-loop-helix 2 knockout mice. *Journal of Agricultural and Food Chemistry*, 63 (21), 5212–5223

[D4] Xiao Xiao, Jonggun Kim, Quancai Sun, **Daeyoung Kim**, Cheon-Seok Park, Tzong-Shi Lu, and Yeonhwa Park* (2015). Preventive effects of cranberry products on experimental colitis induced by dextran sulphate sodium in mice. *Food Chemistry*, 167, 438–446

[D3] Yooheon Park and Jonggun Kim and Angus G. Scrimgeour and Michelle L. Condlin and **Daeyoung Kim** and Yeonhwa Park* (2013). Conjugated linoleic acid and calcium co-supplementation

improves bone health in ovariectomised mice. *Food Chemistry*, 140, 280–288

[D2] Jun Ho Kim, Yooheon Park, **Daeyoung Kim**, Deborah J. Good, Yeonhwa Park* (2013). Dietary conjugated nonadecadienoic acid prevents adult-onset obesity in nescient basic helix-loop-helix 2 knockout mice. *Journal of Nutritional Biochemistry*, 24, 556-566

[D1] Jun Ho Kim, Yooheon Park, **Daeyoung Kim** and Yeonhwa Park* (2012). Dietary influences on nonexercise physical activity and energy expenditure in C57BL/6J mice. *Journal of Food Science*, 77(2):H63-8

Technical report
(*: corresponding author)

[E1] Zheng Wei, **Daeyoung Kim** and Erin M. Conlon*(2016). Parallel computing for copula parameter estimation with big data: a simulation study. <https://arxiv.org/abs/1609.05530>

Funding

Funded Grant

- [H8] USDA Agriculture and Food Research Initiative (AFRI) Competitive Grant
- Title: Interactions of oxidized PUFAs with gut microbiota to promote colonic inflammation
 - Role: **Co-Principal Investigator** (PI and Co-PIs: Dr. Guodong Zhang, Department of Food Science, University of Massachusetts; Dr. Eric Decker, Department of Food Science, University of Massachusetts; Dr. Hang Xiao, Department of Food Science, University of Massachusetts; Dr. David Sela, Department of Food Science, University of Massachusetts; Dr. **Daeyoung Kim**, Department of Mathematics & Statistics, University of Massachusetts)
 - Project dates: 04/15/2020-04/14/2023
 - Amount requested: Total \$ 499,826.23 (Direct: \$ 362,449.45; Indirect: \$ 137,376.78)
- [H7] National Institutes of Health (NIH)
- Title: Prevention of obesity-enhanced colorectal cancer via targeting soluble epoxide hydrolase
 - Role: **Co-Principal Investigator** (PI and Co-PIs: Guodong Zhang, Department of Food Science, University of Massachusetts; **Daeyoung Kim**, Department of Mathematics & Statistics, University of Massachusetts; Bruce Hammonck, Department of Entomology, UC Davis)
 - Project dates: 09/23/2019-08/31/2021
 - Amount requested: Total \$146,670.00 (Direct: \$ 100,000; Indirect: \$ 46,670)
- [H6] USDA AFRI Competitive Grant
- Title: Modulation of colon tumorigenesis by dietary fatty acids
 - Role: **Co-Principal Investigator** (PI and Co-PIs: Guodong Zhang, Department of Food Science, University of Massachusetts; **Daeyoung Kim**, Department of Mathematics & Statistics, University of Massachusetts; Liu, Zhenhua, Department of Food Science, University of Massachusetts; Xiao, Hang, Department of Food Science, University of Massachusetts)
 - Project dates: 03/01/2019 - 2/28/2022
 - Amount requested: Total \$406,651 (Direct: \$ 284,648; Indirect: \$ 122,003)
- [H5] NIH/NCI R03 CA218520
- Title: Prevention of colorectal cancer via targeting CYP epoxygenases
 - Role: **Co-Principal Investigator** (PI and Co-PIs: Guodong Zhang, Department of Food Science, University of Massachusetts; **Daeyoung Kim**, Department of Mathematics & Statistics, University of Massachusetts; Hang Xiao, Department of Food Science, University of Massachusetts; Darryl Zeldin, National Institute of Environmental Health Sciences; Bruce Hammock, Department: Department of Entomology, University of California Davis)
 - Project dates: 03/01/2018 – 02/29/2020
 - Amount requested: Total \$148,770 (Direct: \$100,000; Indirect: \$48,770)

[H4] FY16 - FY21 MSP Faculty Research Fund

- Role: **Principal Investigator**
- Project dates: 09/01/2016 – 06/30/2022. Amount awarded: \$1000 per year

[H3] USDA AFRI Competitive Grant

- Title: Omega-3 Polyunsaturated Fatty Acids on Colon Cancer Prevention
- Role: **Co-Principal Investigator** (PI and Co-PIs: Guodong Zhang, Department of Food Science, University of Massachusetts; **Daeyoung Kim**, Department of Mathematics & Statistics, University of Massachusetts; Zhenhua Liu, Department of Nutrition, University of Massachusetts; Hang Xiao, Department of Food Science, University of Massachusetts; Jun Yang, Department of Entomology and Nematology, University of California (UC Davis); Bruce Hammock, Department of Entomology and Nematology, University of California Davis)
- Project dates: 12/1/2015-11/30/2019
- Amount requested: Total \$ 500,000 (Direct: \$364,727; Indirect: \$135,273)

[H2] Flex Grant for Teaching/Faculty Development

- Role: **Principal Investigator**
- Project dates: 11/03/2010 – 11/02/2011. Amount awarded: \$500.

[H1] Faculty Research Grant

- Title: Visualization and quantification of uncertainties in statistical models
- Role: **Principal Investigator**
- Project dates: 06/01/2010 – 08/30/2011. Amount awarded: \$4,000.

Submitted but unfunded grant proposals

- The number of unfunded proposals is 35 and the complete list can be provided upon request.

Travel Grants

University of Massachusetts, Department of Mathematics and Statistics, Amherst, MA

- Thirteenth Meeting of New Researchers in Statistics and Probability, July 27–30, 2010, University of British Columbia, BC, Canada
- The 1st Institute of Mathematical Statistics (IMS) Asia Pacific Rim Meeting (Topic-contributed section, Mixture Model and Its Applications), June 28-July 1, 2009, Seoul National University at Seoul, South Korea
- Symposium on New Directions in Asymptotic Statistics (New Researcher session), May 15-16, 2009, The Georgia center, Department of Statistics, University of Georgia, Athens, GA

The Pennsylvania State University, Department of Statistics, University Park, PA

- Travel Grants (Joint Statistical Meetings 2006, 2007; Eastern North American Region 2007)

Invited Presentations

“Statistical Dependence Learning through Copula”, Departmental Colloquium, Department of Mathematics and Statistics, University of Massachusetts Amherst, April 29, 2021

“Exploratory modeling approach for contingency tables with an ordinal response”, Department of Mathematics, Boise State University, March 17, 2020

(I was invited as a speaker in the department colloquium, but my talk was cancelled due to Coronavirus outbreak)

“Analysis of asymmetric dependence in contingency tables: subcopula-based regression approach”, Joint Statistical Meetings (JSM) 2018, Vancouver, British Columbia, Canada, Topic Contributed

Papers Session on Recent development in the assessment and modeling of asymmetric dependence (Section on IMS), August 1, 2018

“On asymmetric dependence in ordinal categorical data: sub copula-based regression approach”, Department of Statistics, The Pennsylvania State University, PA, May 9, 2018

“Analysis of asymmetric dependence in contingency tables: subcopula-based regression approach”, The 32th New England Statistical Symposium, University of Massachusetts, Amherst, MA, Invited session on Statistical dependence modeling and inference, April 13-14, 2018

“Confidence distribution sampling and its application”, The 31th New England Statistical Symposium, University of Connecticut, CT, Invited session on Statistical Approaches to Data Modeling and Analysis, April 22, 2017

“P-value in hypothesis testing: misinterpretation and false discovery rate”, Guest Lecture (75 minutes) for FOOD-SCI 797R (ST-Research Methods), Department of Food Science, University of Massachusetts Amherst, November 28, 2016

“Local identifiability in finite mixture model: a gold standard solution?”, Joint Statistical Meetings (JSM) 2016, Chicago, USA, Topic Contributed Papers (Section on Statistical Learning and Data Science and Section on Statistical Computing), August 1, 2016

“Statistical inference of incomplete contingency tables”, Department of Industrial Engineering, Pusan National University, June 2, 2016

“Challenges on inference of incomplete contingency tables : missing data mechanism and boundary solutions”, Department of Statistics, Pusan National University, May 26, 2016

“On the assessment of the adequacy of asymptotic theory in finite mixture models”, 2016 Korean Statistical Society meeting, South Korea, Invited session on Innovative Methods and Applications for Mixture Models, May 20-21, 2016

“On missing data mechanism in two-way incomplete contingency table”, Department of Applied Statistics, Hoseo University, March 31, 2016

“Selection of likelihood-based estimator in the finite mixture model: k-deleted likelihood”, Department of Statistics, Pusan National University, February 25, 2016

“On missing data mechanism in two-way incomplete contingency table”, The 29th New England Statistical Symposium, University of Connecticut, CT, Invited session on Statistical Challenges in Modeling and Application, April 25, 2015

“Guidelines for statistical analysis”, Guest Lecture (75 minutes) for FOOD-SCI 797R (ST-Research Methods), Department of Food Science, University of Massachusetts Amherst, November 20, 2014

“Assessment of the number of components in Gaussian mixture models in the presence of multiple local maximizers”, Joint Statistical Meetings (JSM) 2014, Boston, USA, Topic Contributed Papers Session on Finite mixture modeling with applications (Section on Statistical Computing, Interface Foundation of North America), August 5, 2014

“Directional dependence analysis: copula approach based on skew-elliptical distribution”, The conference on Statistics and Causality, University of Vienna, Oskar Morgenstern Platz 1, Vienna, Austria, May 23-24, 2014

(I was invited as an invited speaker, but I could not attend this conference due to an urgent family

medical issue)

“Challenging issues in likelihood inference on mixture models”, Pattern Theory Group Seminar, Division of Applied Mathematics, Brown University, RI, February 12, 2014

“Adventures in likelihood Inference on mixture models”, Department of Statistics, Korea University, Seoul, South Korea, June 4, 2013

“Assessment of the number of components in gaussian mixture models in the presence of multiple local maximizers”, 2013 Korean Statistical Society meeting, South Korea, Korean International Statistical Society (KISS)-Sponsored Invited Session on Advanced topics in Complex Data, May 24-25, 2013

“Assessment of the number of components in gaussian mixture models in the presence of multiple local maximizers”, The 27th New England Statistical Symposium, University of Connecticut , CT, Invited session on Challenges in Modern Modeling Methods, April 27, 2013

“Empirical identifiability and the topology of mixture likelihood regions”, Institute of Statistical Science, Academia Sinica, Taiwan, ROC, June 8, 2011

“Using confidence distribution sampling to visualize confidence sets”, The Thirteenth Meeting of New Researchers in Statistics and Probability, University of British Columbia, BC, Canada, July 27-30, 2010

“Selection of consistent roots to the likelihood equation in finite mixtures of location-scale distributions”, The UMass Machine Learning and Friends Lunch (MLFL) series, Department of Computer Science, University of Massachusetts Amherst, November 5, 2009

“Likelihood based confidence sets and empirical identifiability in the mixture model”, Department of Community Health, Center for Statistical Sciences at Brown university, October 6, 2009

“Likelihood confidence sets and empirical identifiability in the mixture model”, The 1st IMS Asia Pacific Rim Meeting, Seoul National University, Seoul, South Korea, Topic-contributed Papers Session on Mixture Model and Its Applications, June 28 - July 1, 2009

“Introduction to finite mixture model”, Research group of Professor Hernando Ombao in Department of Community Health, Center for Statistical Sceinces at Brown university, May 21, 2009

“Visualizing asymptotics: using confidence distribution sampling to visualize confidence sets”, Symposium on New Directions in Asymptotic Statistics (New Researcher session), The Georgia center(Department of Statistics, University of Georgia), Athens, GA, May 15-16, 2009

“k-deleted likelihood in normal mixture models”, Joint UConn-UMass Colloquium, Department of Statistics, University of Connecticut, Storrs, CT, April 1, 2009

“Mixture inference at the weak identifiability”, Statistics and Probability Seminar series, Department of Mathematics and Statistics, Boston University, Boston, MA, November 13, 2008

“The mixture inference at the edge of identifiability”, 2008 Colloquium (February), University of Massachusetts Amherst, MA, California State University Fullerton, CA, George Washington University, Washington, D.C. and Old Dominion University, V.A.

Presentations

“You say potato, I hear tomato”, Math Teaching Seminar 2015, Department of Mathematics and Statistics, University of Massachusetts Amherst, December 9, 2015 (with Professor Jenia Tevelev)

“Leave-k-out likelihood: alternative for selecting the best likelihood-based estimator in the presence of multiple local maximizers”, JSM 2013, Montreal, Quebec, Canada, Assorted Topics in Mathematical Statistics I Contributed Papers (IMS), August 5, 2013

“Set estimation in locally identifiable mixture models”, JSM 2011, Miami Beach, Florida, Topic Contributed Papers Session on Statistical Inference for Mixture Models (IMS, International Indian Statistical Association, Section on Nonparametric Statistics), August 1, 2011

“Selection of consistent roots to the likelihood equation in finite mixtures of location-scale distributions”, JSM 2010, Vancouver, British Columbia, Canada, Topic Contributed Papers Session on Recent Development in Mixture Models and Applications (IMS, Section on Quality and Productivity), August 4, 2010

“Data-based assessment of asymptotic label identifiability in mixture models”, JSM 2009, Washington, D.C., Contributed Papers Session on Miscellaneous Theory I, August 2, 2009

“Simulation-based visualization of inference functions”, Eastern North American Region (ENAR) 2009, San Antonio, TX, Contributed Papers Session on Applied data analysis, Graphical Display and Biostatistical Literacy, March 17, 2009

“Simulation-based visualization of inference functions”, JSM 2008, Denver, CO, Contributed Papers Session on Bayesian and Likelihood Inference, August 4, 2008

“The mixture labelling problem in terms of a frequentist view”, JSM 2007, Salt Lake, Utah, Contributed Paper Session on Nonparametric Statistics and Mixture models, July 30, 2007

“Finite mixture inference using the Quadratic Inference Function”, ENAR 2007 Spring, Atlanta, GA, Contributed Paper Session on General Methods I, March 12, 2007

“The mixture labelling problem: a frequentist view”, JSM 2006, Seattle, WA, Contributed Paper Session on Stochastic Process and Mixture Models, August 9, 2006

“Optimal design Software: Power Calculations in Longitudinal and Multilevel Research”, Population Research Institute Workshop 2005, the Pennsylvania State University, PA

“Study for Modelling and Prediction of the number of bird species”, Poster Competition of Alumni Workshop 2004, Department of Statistics, the Pennsylvania State University, PA

Teaching Experience

University of Massachusetts, Department of Mathematics and Statistics, Amherst, MA

- Stat 525 Regression analysis Fall 2021, Spring 2017, Fall 2016, 2015, 2014
(**Integrative Experience course**)
(Course number changed to Stat 525 from Stat 505; Same course as Stat 505)
- Stat 505 Applied regression analysis Fall 2013
(**Integrative Experience course**)
- Stat 505 Applied regression analysis Fall 2009
- Stat 516 Statistics II Spring 2015, 2012, 2010, 2009

- Stat 515 Statistics I Spring 2010, 2009, Fall 2008
- Stat 597T: ST-Analysis of Discrete Data Spring 2020
- Stat 608 Mathematical statistics II Spring 2021, 2020, 2019, 2018, 2012, 2011
- Stat 607 Mathematical statistics I Fall 2021, 2020, 2019, 2018, 2017, 2011, 2010
- Stat 697R ST-Regression modeling 2015, 2014, 2013
Fall 2016 (11/30-12/14 due to Erin's sick leave)
- Stat 697TS Time series analysis and application Spring 2017, 2014, 2013
(**Graduate Topics course**)
- Stat 725 Estimation Theory and Hypothesis Testing Fall 2020, 2018, 2016
(**Graduate large-sample/asymptotic theory**)
- Stat 797L ST-Mixture Models (Latent variable models) Spring 2018
(**Graduate Topics course**)

The Pennsylvania State University, Department of Statistics, University Park, PA

Instructor

- Math/Stat414 Introduction to probability theory Spring 2007

Teaching Assistant

- Stat 240 Introduction to biometry Spring 2004
- Math/Stat 418: Probability Spring 2004, Fall 2004

Visiting scholar invitation and Mentoring

Visiting scholar invitation

- Byungtae Seo (Ph.D.Statistics, Professor, Department of Statistics, Sungkyunkwan University, Seoul, Republic of Korea) Fall 2016 December - Fall 2017 December

VAP (Visiting Assistant Professor)

- Zheng Wei (Ph.D. Mathematics, New Mexico State University, US) Fall 2015 - Spring 2017
 - Current position : Assistant professor, Department of Mathematics and Statistics, University of Maine, USA
 - Project subjects: Methodology development for multivariate nonexchangeable copula and its application to copula regression modelling

Postdoctoral researcher

- Seongyong Kim (Ph.D. Statistics, Korea University, South Korea) Fall 2013 - Fall 2014
 - Current position : Assistant professor, Department of Applied Statistics, Hoseo University, Asan, South Korea
 - Project subjects: Methodology development for incomplete categorical data, Statistical modeling for age-specific fertility rate, Innovative copula models for directional dependence

Thesis advisor

- Li Wang (Department of Mathematics and Statistics, UMass Amherst) Fall 2016 - Spring 2021

- Degree: PhD in Statistics
- Thesis title: Model-free descriptive modeling for multivariate categorical data with an ordinal dependent variable
- Current position : Quantitative data scientist, Freddie Mac
- Brian Kim (Department of Mathematics, Amherst College) Fall 2012
- Co-advisor of Honors Thesis

Independent Study with students

- Li Wang (Department of Mathematics and Statistics, UMass Amherst): Fall 2016
- Weilong Hu (Department of Mathematics and Statistics, UMass Amherst): Spring 2013
- Xiangdong Gu (Department of Mathematics and Statistics, UMass Amherst): Spring 2012 and Fall 2011
- Brian Kim (Department of Mathematics, Amherst College): Co-advisor of Honors Thesis, Fall 2012
- Boxuan Cui (Department of Mathematics and Statistics, UMass Amherst): Spring 2011, Summer 2011 and Fall 2011
- Dong Yan (Department of Mathematics and Statistics, UMass Amherst): Fall 2011

PhD Literature-based Oral Exam

- Amirhossein Alvandi (Department of Mathematics and Statistics, UMass Amherst, 2021 August)
- Trang Le (Department of Mathematics and Statistics, UMass Amherst, 2020 January)
- Meilan Chen (Department of Mathematics and Statistics, UMass Amherst, 2020 January)
- Vasin Suntayodom (Department of Mathematics and Statistics, UMass Amherst, 2017 August)
- Dongah Kim (Department of Mathematics and Statistics, UMass Amherst, 2017 May)
- Li Wang (Department of Mathematics and Statistics, UMass Amherst, 2017 January)
- Shuaimin Kang (Department of Mathematics and Statistics, UMass Amherst, 2016 August)
- Jingyao Hou (Department of Mathematics and Statistics, UMass Amherst, 2016 January)

PhD Thesis Committee Member

- Dongah Kim (Department of Mathematics and Statistics, UMass Amherst, 2021)
 - PhD dissertation defense on May 18th, 2021
- Shuaimin Kang (Department of Mathematics and Statistics, UMass Amherst, 2020)
 - PhD dissertation defense on March 30, 2020 and proposal defense on February 14th, 2020
- Renalison Farias Pereira (Department of Food Science, UMass Amherst, 2020)
 - PhD defense on March 30, 2020 and dissertation proposal on May 3rd, 2019
- Shengmin Luo (Department of Civil and Environmental Engineering, UMass Amherst, 2019)
 - PhD defense on December 4, 2019 and defense proposal on August 9th, 2018
- Boqin Sun (Department of Mathematics and Statistics, UMass Amherst, 2018)
 - PhD defense on August 28th, 2018
- Zhuo Yang (Department of Mechanical and Industrial Engineering, UMass Amherst, 2018)
 - PhD defense on June 12th, 2018 and defense proposal on December 22th, 2017
- Quancai Sun (Department of Food Science, UMass Amherst, 2016)
 - PhD defense proposal on December 5th, 2016
- Yoo Kim (Department of Food Science, UMass Amherst, 2015)
- Minjeong Shin (Research and Evaluation Methods Program in School of Education, UMass Amherst, 2015)
- Youngho Kim (Department of Computer Science, UMass Amherst, 2014)
- Yue Zhao (Department of Mathematics and Statistics, UMass Amherst, 2012)
- Akshat Kumar (Department of Computer Science, UMass-Amherst, 2012)
- Yu Meng (Research and Evaluation Methods Program in School of Education, UMass Amherst, 2012)
- Deng Nina (Research and Evaluation Methods Program in School of Education, UMass Amherst,

2011)

- Melissa Eliot (School of Public Health and Health Sciences, UMass Amherst, 2011)
- Jacob Gagnon (Department of Mathematics and Statistics, UMass Amherst, 2010)

Undergraduate Honors Thesis Committee Member

- Jonah Einson (BIOCHM Biochem.; Molecular Biol.; Mathematics, UMass Amherst, Spring 2017)
- Victoria Wang (Department of Mathematics and Statistics, UMass Amherst, 2014)

Department service

- Personal Committee Fall 2021 - present
- Teaching Committee Fall 2021 - present
- Stat Grad Advising for Undergrads Fall 2021 - present
- Statistics Coordinator Fall 2018 - Summer 2021
- Graduate Affairs Committee (GAC) Fall 2018 - Summer 2021
- Statistics Graduate Admissions Chair Fall 2019 - Summer 2021,
Fall 2016 - Spring 2018,
Spring 2011 – Fall 2015
- Statistics Graduate Admissions Ad-Hoc Committee Spring 2019
- Undergraduate Affairs Committee (UAC) Fall 2016- Spring 2017
- TA/VAP/POSTDOC Teaching Supervision Fall 2015
 - participate in organizational meetings and teaching seminars
 - give a teaching seminar with Professor Tevelev
- Graduate Admissions Committee Spring 2011 – Fall 2015, Fall 2016 - Spring 2017
- Faculty Search Committee
 - Lecturers at Mt Ida committee member Fall 2019, Spring 2019
 - Tenure Track Pathways (TTP) committee member Fall 2018
 - Statistics Assistant Professor search committee member Fall 2017 – Spring 2018
Fall 2013 – Spring 2014
Fall 2009 – Spring 2010
 - Mathematics Assistant Professor search committee member Fall 2011 – Spring 2012
 - Visiting Assistant Professor search committee member and statistics subcommittee chair Fall 2016 – Spring 2017
 - Visiting Assistant Professor search committee member Fall 2011 – Spring 2012
 - Visiting Assistant Professor search subcommittee chair Fall 2010 – Spring 2011
- Faculty advisor to undergraduate students Fall 2016 – present
Spring 2013 – Fall 2015
Spring 2010 – Spring 2012
- Department SRTI Processing Fall 2010 – Spring 2019
- Chair/Member of qualifying exam committee August 2009 – present

- Statistics and probability seminar committee Fall 2008 – Fall 2010
- Colloquium committee Fall 2010 – Spring 2012
- Course chair for Stat 515 Spring 2010, 2009
- Course chair for Stat 516 Spring 2015

Professional activities

External evaluator for tenure and/or promotion

- Department of Mathematics, Boise State University, June 2016 (chosen as an external evaluator for the promotion of Dr. Jaechoul Lee to Professor appointment at Boise State University)

Conference session organizer

- Topic contributed session, Recent development in the assessment and modeling of asymmetric dependence, JSM 2018, Vancouver, British Columbia, Canada
- Invited session, Statistical dependence modeling and inference, The 32nd New England Statistics Symposium, University of Massachusetts Amherst, Amherst, MA, 2018
- Topic contributed session, Advances in Mixture Modeling and Applications, JSM 2012, San Diego, CA
- Topic contributed session, Statistical Inference for Mixture Models, JSM 2011, Miami Beach, FL
- Topic contributed session, Mixture Model and Its Applications, The 1st IMS Asia Pacific Rim Meeting, June 28 – July 1st, 2009, Seoul National University, Seoul, South Korea

Conference session chair

- KISS-Sponsored Invited Session, Topics in Estimation, Testing, and Statistical Education, May 24th-25th, 2013, Korean Statistical Society meeting, South Korea
- Topic contributed session, Advances in Mixture Modeling and Applications, JSM 2012, San Diego, CA
- Contributed session, High-Dimensional Covariance Matrix Inference, JSM 2011, Miami Beach, FL
- Contributed session, Modern Regression, The Thirteenth Meeting of New Researchers in Statistics and Probability, July 27–30, 2010, University of British Columbia, BC, Canada
- Contributed session, Graphics for Regression, Classification, and Dimension Reduction, JSM 2008, Denver, CO

Ad-hoc Journal Reviewer

- *Journal of American Statistical Association (Theory and Methods)*, *Statistical Science*, *Statistica Sinica*, *The American Statistician*, *Computational Statistics and Data Analysis*, *Canadian Journal of Statistics*, *Electronic Journal of Statistics*, *Journal of Computational and Graphical Statistics*, *Advances in Data Analysis and Classification*, *Journal of Statistical Planning and Inference*, *Journal of Nonparametric Statistics*, *Journal of Probability and Statistics*, *Statistics and Probability Letter*, *Statistica Neerlandica*, *Statistical Methods & Applications*, *Journal of Statistical Computation and Simulation*, *Communications in Statistics - Simulation and Computation*, *Statistical Papers*, *Advances in Statistical Analysis*, *SAGE Open*, *Journal of the Korean Statistical Society*, *Korean Journal of Applied Statistics*, *METRON - International Journal of Statistics*, *Food and Chemical Toxicology*

Outreach (Off-Campus Community Service)

Amherst Korean School (105 Ferry St. South Hadley, MA)

- Operating committee board member (Treasurer) Spring 2020 - present