

Brief CV

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Academic positions

- Tenured Associate Professor, Department of Mathematics, Boise State University, USA, August 2017 – Present.
- Tenure-track Assistant Professor, Department of Mathematics, Boise State University, USA, July 2012 – August 2017.

Academic background

- **Post-doctoral Research Associate**, Department of Biostatistics, The University of North Carolina at Chapel Hill, USA, September 2011 – July 2012.
- **Ph.D.** in Statistics, Department of Statistics, University of Minnesota, Twin Cities, USA, Thesis topic: Edge structure preserving 2-D and 3-D image denoising by jump surface estimation, Advisor: Prof. Peihua Qiu, Fall 2006 – August 2011.
[Link to Ph.D. Thesis]
- **Master of Science** in Statistics, Department of Statistics, University of Minnesota, Twin Cities, USA, Fall 2006 – April 2010.
- **Master of Statistics**, Indian Statistical Institute, Kolkata, India, *Specialization*: Biostatistics and data analysis, 2004 – 2006.
- **Bachelor of Statistics with Honours**, Indian Statistical Institute, Kolkata, India, 2001 – 2004.

Current research interests

- Statistical image analysis
- Statistical process control
- Jump regression analysis and its applications
- Application of statistical tools in various scientific research

Publication of research articles in peer-reviewed journals

- [26] Calderon-Garciduenas, L., **Mukherjee, P.S.**, Kulesza, R.J., Torres-Jardon, R. Hernandez-Luna, J., Avila-Cervantes, R., Macias-Escobedo, E., Gonzalez-Gonzalez, O., Gonzalez-Maciél, A., Garcia-Hernandez, K., Hernandez-Castillo, A., Research UVM Group, and Villarreal-Rios, R. “Mild Cognitive Impairment and Dementia Involving Multiple Cognitive Domains in Mexican Urbanites,” *Journal of Alzheimer’s Disease*, **2019**, 68(3), 1113–1123.
[Link to the article]
- [25] Calderon-Garciduenas, L., **Mukherjee, P.S.**, Waniek, K., Holzer, M., Chao, C.K., Thompson, C., Ruiz-Ramos, R., Calderon-Garciduenas, A., Franco-Lira, M., Reynoso-Robles, R., Gonzalez-Maciél, A., and Lachmann, I. “Non-Phosphorylated Tau in Cerebrospinal Fluid is a Marker of Alzheimer’s Disease Continuum in Young Urbanites Exposed to Air Pollution,” *Journal of Alzheimer’s Disease*, **2018**, 66(4), 1437–1451.
[Link to the article]
- [24] Kang, Y., **Mukherjee, P.S.** and Qiu, P. “Efficient Blind Image Deblurring Using Nonparametric Regression And Local Pixel Clustering,” *Technometrics*, **2018**, 60(4), 522-531.
[Link to the article]
- [23] Calderon-Garciduenas, L., Gonzalez-Maciél, A., Reynoso-Robles, R., Kulesza, R.J., **Mukherjee, P.S.**, Torres-Jardon, R., Ronkko, T., and Doty, R.L. “Alzheimer’s disease and alpha-synuclein pathology in the olfactory bulbs of infants, children, teens and adults ≤ 40 years in Metropolitan Mexico City. APOE4 carriers at higher risk of suicide accelerate their olfactory bulb pathology,” *Environmental Research*, **2018**, 166, 348–362.
[Link to the article]
- [22] Calderon-Garciduenas, L., Gonzalez-Maciél, A., Reynoso-Robles, R., Delgado-Chavez, R., **Mukherjee, P.S.**, Kulesza, R.J., Torres-Jardon, R., Avila-Ramirez, J. and Villarreal-Rios, R. “Hallmarks of Alzheimer disease are evolving relentlessly in Metropolitan Mexico City infants, children and young adults. APOE4 carriers have higher suicide risk and higher odds of reaching NFT stage V at ≤ 40 years of age,” *Environmental Research*, **2018**, 164, 475–487.
[Link to the article]
- [21] **Mukherjee, P.S.**, “A multi-resolution and adaptive 3-D image denoising framework with applications in medical imaging,” *Signal, Image and Video Processing*, **2017**, 11(7), 1379–1387.
[Link to the article]
- [20] Calderon-Garciduenas, L., Reynoso-Robles, R., Perez-Guille, B., **Mukherjee, P.S.**, and Gonzalez-Maciél, A. “Combustion-derived nanoparticles, the neuroenteric system, cervical vagus, hyperphosphorylated alpha synuclein and tau in young Mexico City residents.” *Environmental Research*, **2017**, 159, 186–201.
[Link to the article]
- [19] Gonzalez-Maciél, A., Reynoso-Robles, R., Torres-Jardon, R., **Mukherjee, P.S.** and Calderon-Garciduenas, L. “Combustion-derived nanoparticles in key brain target cells and organelles in young urbanites: Culprit hidden in plain sight in Alzheimer’s disease development,” *Journal*

- of Alzheimer's Disease*, **2017**, 59(1), 189–208.
[Link to the article]
- [18] Calderon-Garciduenas, L., Gonzalez-Gonzalez, L.O., Kulesza, R.J., Feh, T.M., Perez-Guille, G., Jimenez-Bravo Luna, M.A., Soriano-Rosales, R.E., Solorio, E., Miramontes-Higuera, J., Chew, A.G.M., Bernal-Morua, A.F., **Mukherjee, P.S.**, Torres-Jardon, R., Mills, P.C., Wilson, W.J., Perez-Guille, B. and D'Angiulli, A. "Exposures to fine particulate matter (PM_{2.5}) and ozone above USA standards are associated with auditory brainstem dysmorphology and abnormal auditory brainstem evoked potentials in healthy young dogs," *Environmental Research*, **2017**, 158, 324–332.
[Link to the article]
- [17] Calderon-Garciduenas, L., Avila-Ramirez, J., Calderon-Garciduenas, A., Gonzalez-Heredia, T., Acuna-Ayala, H., Chao, C.K., Thompson, C., Ruiz Ramos, R., Cortes-Gonzalez, V., Martinez -Martinez, L., Garcia-Perez, M.A., Reis, J., **Mukherjee, P.S.**, Torres-Jardon, R., Lachmann, I. "Cerebrospinal Fluid Biomarkers in Highly Exposed PM_{2.5} Urbanites: The Risk of Alzheimer's and Parkinson's Diseases in Young Mexico City Residents," *Journal of Alzheimer's Disease*, **2016**, 54(2), 597–613.
[Link to the article]
- [16] **Mukherjee, P.S.**, "On phase II monitoring of the probability distributions of univariate continuous processes," *Statistical Papers*, **2016**, 57(2), 539–562.
[Link to the article]
- [15] Calderon-Garciduenas, L., Reynoso-Robles, R., Vargas- Martinez, J., Gomez-Maqueo-Chew, A., Perez-Guille, B., **Mukherjee, P.S.**, Torres-Jardon, R., Perry, G. and Gonzalez-Maciel, A. "Prefrontal white matter pathology in air pollution exposed Mexico City young urbanites and their potential impact on neurovascular unit dysfunction and the development of Alzheimer's disease," *Environmental Research*, **2016**, 146, 404–417.
[Link to the article]
- [14] Calderon-Garciduenas, L., Mora-Tiscareno, A., Melo-Sanchez, G., Rodriguez-Diaz, J., Torres-Jardon, R., Styner, M., **Mukherjee, P.S.**, Lin, W. and Jewells, V. "A Critical Proton MR Spectroscopy Marker of Alzheimer's Disease Early Neurodegenerative Change: Low Hippocampal NAA/Cr Ratio Impacts APOE e4 Mexico City Children and Their Parents," *Journal of Alzheimer's Disease*, **2015**, 48(4), 1065–1075.
[Link to the article] [Link to a manuscript version]
- [13] Calderon-Garciduenas, L., Chao, C.K., Thompson, C., Rodriguez-Diaz, J., Franco-Lira, M., **Mukherjee, P.S.** and Perry, G. "CSF biomarkers: low amyloid-beta 1-42 and BDNF and high IFN gamma differentiate children exposed to Mexico City high air pollution v controls. Alzheimer's Disease Uncertainties," *Journal of Alzheimer's Disease & Parkinsonism*, **2015**, 5(2), 189.
[Link to the article]
- [12] Vojdani, A., **Mukherjee, P.S.**, Berookhim, J. and Kharrazian, D. "Detection of antibodies against human and plant aquaporins in patients with multiple sclerosis," *Autoimmune Dis-*

eases, **2015**, Article ID 905208.

[Link to the article]

- [11] Calderon-Garciduenas, L., Franco-Lira, M., D’Angiulli, A., Rodriguez-Diaz, J., Blaurock-Busch, E., Busch Y., Chao, C.K., Thompson, C, **Mukherjee, P.S.**, Torres-Jardon, R. and Perry, G., “Mexico City normal weight children exposed to high concentrations of ambient PM2.5 show high blood leptin and endothelin-1, vitamin D deficiency, and food reward hormone dysregulation versus low pollution controls. Relevance for obesity and Alzheimer disease,” *Environmental Research*, **2015**, 140, 579–592.

[Link to the article]

- [10] Vojdani, A., Kharrazian, D. and **Mukherjee, P.S.**, “Elevated levels of antibodies against xenobiotics in a subgroup of healthy subjects,” *Journal of Applied Toxicology*, **2015**, 35(4), 383–397.

[Link to the article]

- [9] **Mukherjee, P.S.** and Qiu, P., “Image Denoising by a Local Clustering Framework,” *Journal of Computational and Graphical Statistics*, **2015**, 24(1), 254–273.

[Link to the article]

- [8] Calderon-Garciduenas, L., Gonzalez-Maciel, A., Vojdani, A., Franco-Lira, M., Reynoso-Robles, R., Montesinos-Correa, H., Perez-Guille, B., **Mukherjee, P.S.**, Torres-Jardon, R., Calderon-Garciduenas, A., and Perry, G., “The Intestinal Barrier in Air Pollution-Associated Neural Involvement in Mexico City Residents: Mind the Gut, the Evolution of a Changing Paradigm Relevant to Parkinson Disease Risk,” *Journal of Alzheimer’s Disease & Parkinsonism*, **2015**, 5(1), 179.

[Link to the article]

- [7] Calderon-Garciduenas, L., Vojdani, A., Busch, E.B., Busch, Y., Friedle, A., Franco-Lira, M., **Mukherjee, P.S.**, Park, S.B., Torres-Jardon, R. and D’Angiulli, A., “Air pollution and children: Neural and tight junction antibodies and combustion metals, the role of barrier breakdown and brain immunity in neurodegeneration,” *Journal of Alzheimer’s Disease*, **2015**, 43(3), 1039–1058.

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- [6] Vojdani, A., Kharrazian, D. and **Mukherjee, P.S.**, “The Prevalence of Antibodies against Wheat and Milk Proteins in Blood Donors and their Contribution to Neuroimmune Reactivities,” *Nutrients*, **2014**, 6(1), 15–36.

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- [5] Calderon-Garciduenas, L., Mora-Tiscareño, A., Franco-Lira, M., Cross, J.V., Engle, R., Gómez-Garza, G., Jewells, V., Weili, L., Medina-Cortina, H., Solorio, E., Chao, C.K., Zhu, H., **Mukherjee, P.S.**, Ferreira-Azevedo, L., Torres-Jardón, R. and D’Angiulli, A., “Flavonol-rich dark cocoa significantly decreases plasma endothelin-1 and improves cognitive responses in urban children,” *Frontiers in Experimental Pharmacology and Drug Discovery*, **2013**, 4(104), 1–13.

[Link to the article]

- [4] **Mukherjee, P.S.** and Qiu, P., “Efficient Bias Correction For Magnetic Resonance Image Denoising,” *Statistics in Medicine*, **2013**, 32(12), 2079–2096.
[Link to the article]
- [3] Qiu, P. and **Mukherjee, P.S.**, “Edge Structure Preserving 3-D Image Denoising By Local Surface Approximation,” *IEEE Transactions on Pattern Analysis and Machine Intelligence*, **2012**, 34(8), 1457–1468.
[Link to the article]
- [2] **Mukherjee, P.S.** and Qiu, P., “3-D Image Denoising By Local Smoothing And Nonparametric Regression,” *Technometrics*, **2011**, 53(2), 196–208.
[Link to the article]
- [1] Qiu, P. and **Mukherjee, P.S.**, “Edge Structure Preserving Image Denoising,” *Signal Processing*, **2010**, 90(10), 2851–2862.
[Link to the article]

Publication of research articles in peer-reviewed conferences

- [2] Gajurel, A., **Mukherjee, P.S.** and Chittoori, B., “Estimating Optimal Additive Content for Soil Stabilization Using Machine Learning Methods,” Eighth International Conference on Case Histories in Geotechnical Engineering, Geo-Congress **2019**, GSP 310, 662–672.
[Link to the article]
- [1] Qiu, P. and **Mukherjee, P.S.**, “Edge Structure Preserving 3-D Image Denoising,” In *Applications of Mathematics and Computer Engineering*, (A. Zemliak and N. Mastorakis ed.), WSEAS Press, **2011**, 111–116.
[Link to the article]

Student advising and mentoring

- Master’s thesis (MATH 593, Boise State University):
 - Samuel Anyaso-Samuel, Thesis title: Dynamic Sampling Versions of Popular SPC Charts for Big Data Analysis, Spring 2019 (Tentatively).
- Master’s project (MATH 591, Boise State University):
 - Tara Sheehan, Project title: Using currently available student information to predict success in a Liberal Arts Mathematics course, Graduation: December 2012, Current job: Instructor, Department of Mathematics, Boise State University.
- Senior thesis (MATH 401, Boise State University):
 - Zach Genta, Project title: Gaussian Kernel Filtering and Pattern Detection in Irradiance Data, Fall 2015.
- Senior Capstone Project (MATH 401, Boise State University):
 - Ryan Cox, Topic: Jump Regression Analysis, Spring 2019.

- Independent study, Master's level (MATH 596, Boise State University):
 - Samuel Anyaso-Samuel, Statistical Inference, Part II, Spring 2019.
 - Samuel Anyaso-Samuel, Statistical Inference, Fall 2018.
 - Luke Weaver, Predictive analysis, statistical learning and machine learning, Spring 2015.
 - Prasanna Bandara, Statistical analysis of multivariate data, Fall 2014.
- Independent study, Bachelor's level (MATH 496, Boise State University):
 - Denise Kimpson, Preparation for the probability test, Society of Actuaries, Spring 2014.
 - Mintaek Lee, Project title: The Hot Hand in Number Matching Lottery Games, Spring 2014.
 - Justin Williams, Preparation for the probability test, Society of Actuaries, Spring 2014.
- Mentoring student's statistical consulting work (Boise State University):
 - AJ Bates (Fall 2017 – Spring 2018).
- Thesis Committee (Boise State University):
 - Master's thesis committee: Amit Gajurel (Fall 2018), Mintaek Lee (Spring 2017), and Rose Ocker (Spring 2014).

Teaching

- Courses taught as Instructor at Boise State University:
 - MATH 574, *Linear Models*: Spring 2017, Spring 2013.
 - MATH 572, *Computational Statistics*: Fall 2018.
 - MATH 472, *Computational Statistics*: Fall 2018.
 - MATH 571, *Data Analysis*: Spring 2014.
 - MATH 471, *Data Analysis*: Spring 2014.
 - MATH 361, *Probability and Statistics I*: Fall 2017, Fall 2016, Fall 2015, Fall 2014, Spring 2014, Fall 2013, Fall 2012.
 - MATH 360, *Engineering Statistics*: Spring 2018, Spring 2017, Spring 2016, Spring 2015.
 - MATH 254: *Introduction to Statistics*: Spring 2015.
- Worked as Teaching Assistant at University of Minnesota, Twin Cities:
 - STAT 5421, *Analysis of Categorical Data*: worked as a grader, Fall 2010.
 - STAT 5303, *Designing Experiments*: Spring 2009.
 - STAT 5302, *Applied Regression Analysis*: Fall 2010, Fall 2008, Spring 2008.
 - STAT 3022, *Data Analysis*: Spring 2010, Fall 2007, Spring 2007.
 - STAT 1001, *Introduction to the Ideas of Statistics*: Fall 2006.

Grants awarded

- [3] College of Arts and Sciences (COAS) Travel Grant award of \$300.00, Boise State University, 2017 – 2018.
- [2] College of Arts and Sciences (COAS) Travel Grant award of \$600.00, Boise State University, 2015 – 2016.
- [1] College of Arts and Sciences (COAS) Travel Grant award of \$400.00, Boise State University, 2012 – 2013.

Interdisciplinary collaborations

- [5] Research on toxicology, with Dr. Lilian Calderón-Garcidueñas *et al.*, The University of Montana, 2011 – Present.
- [4] Research on immunosciences, with Dr. Aristo Vojdani *et al.*, Immunosciences Lab., Inc., 2013 – 2015.
- [3] Statistical analysis of small animal medicine (SAM) data, Veterinary Diagnostic Laboratory, University of Minnesota, Twin Cities, USA, Advisor: Prof. James R. Mickelson, Summer 2008.
- [2] Statistical analysis of admissions data of Veterinary Science Department of University of Minnesota, Veterinary Diagnostic Laboratory, University of Minnesota, Twin Cities, USA, Advisor: Prof. James R. Mickelson, Summer 2008.
- [1] Statistical analysis of certain case-control studies of a few genetic diseases of human beings including in-hand experiments and data analysis, Molecular and Human Genetics Division, Indian Institute of Chemical Biology, Kolkata, India, Advisor: Dr. Kunal Ray, Summers during 2002–2004.

Selected Invited Lectures

- [5] “A computationally efficient change-point based SPC chart to detect arbitrary distributional change”, International Indian Statistical Association (IISA) conference, University of Florida at Gainesville, FL, USA, May 19, 2018.
- [4] “Phase II Monitoring of Big Data by Data Pruning”, Workshop on SPC for Big Data Streams, Nankai University, Tianjin, China, July 09, 2017.
- [3] “A Multi-resolution and Locally Adaptive 3-D Image Denoising Framework”, Biostatistics Workshop: Statistical Inference for Biomedical Big Data, University of Florida at Gainesville, April 08, 2017.
- [2] “Image Denoising by Non-parametric Local Smoothing”, Undergraduate Seminar, Boise State University, USA, December 07, 2012.
- [1] “Efficient Bias Correction For MRI Image Denoising”, International Indian Statistical Association (IISA) conference, North Carolina State University, USA, April 23, 2011.

Selected Contributed Lectures

- [5] “An efficient Phase II SPC chart based on p-values for monitoring probability distributions of univariate continuous processes”, International Conference in Statistics and Probability, Indian Statistical Institute, Kolkata, January 03, 2018. This conference was organized to commemorate the 125-th birth anniversary of Prasanta Chandra Mahalanobis.
- [4] “An adaptive 3-D image denoising framework”, The 4th Institute of Mathematical Statistics Asia Pacific Rim Meeting, The Chinese University of Hong Kong, June 30, 2016.
- [3] “An efficient 3-D image denoising with applications in medical imaging”, Western North American Region (WNAR) Meetings, Boise State University, USA, June 15, 2015.
- [2] “On Phase II Monitoring of the Probability Distributions of Univariate Continuous Processes”, Western North American Region (WNAR) Meetings, University of Hawai‘i at Mānoa, USA, June 18, 2014.
- [1] “Image Details Preserving Image Denoising by Local Clustering”, Eastern North American Region (ENAR) Meetings, Orlando, USA, March 13, 2013.

Selected service to the community and profession

- Refereed for the following journals:
Applied Sciences, Biomedical Signal Processing and Control, Computational Statistics and Data Analysis, Computers & Industrial Engineering, Current Medical Imaging Reviews, Digital Signal Processing, Entropy, Environmental Research, European Journal of Operational Research, Human Brain Mapping, IET Image Processing, International Journal of Imaging Systems and Technology, International Journal of Information Fusion, International Journal of Production Research, Journal of Imaging, Journal of the American Statistical Association, Remote Sensing, Sensors, Signal, Image and Video Processing, Signal Processing, Statistical Papers, Statistics in Medicine, Technometrics, and The Open Statistics & Probability Journal.
- Refereed for the following conferences:
International Conference on BioMedical Engineering and Informatics (BMEI 2011), International Congress on Image and Signal Processing (CISP 2011), International Conference on BioMedical Engineering and Informatics (BMEI 2009), and International Congress on Image and Signal Processing (CISP 2009).
- Refereed (2017) one book for Springer.
- Refereed (2015) one paper for Springer Edited (Editor: S. Ejaz Ahmed) Volume: Big and Complex Data Analysis: Statistical Methodologies and Applications.

References

References will be provided upon request.