Brief CV

Partha Sarathi Mukherjee

405 R.A. Fisher Bhavan

Interdisciplinary Statistical Research Unit (ISRU)

Indian Statistical Institute (ISI), Kolkata

203 Barrackpore Trunk (B.T.) Road, Kolkata 700108, India

Phone: +91 33 2575 3448

E-mail: psm@isical.ac.in

Web: https://psmstat.github.io/

Academic positions

- Associate Professor, Interdisciplinary Statistical Research Unit (ISRU), Indian Statistical Institute (ISI), Kolkata, India, June 2019 – Present.

- Tenured Associate Professor, Department of Mathematics, Boise State University, USA, August 2017 – May 2019.

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

- Post-doctoral Research Associate, Department of Biostatistics, The University of North Carolina at Chapel Hill, USA, Topic: Statistical Analysis of Diffusion Tensor Data, Advisor: Prof. Hongtu Zhu, September 2011 – July 2012.

Academic background

- **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 the 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 comparison and monitoring
- Image registration using jump regression analysis
- Statistical process control
- Blind image deblurring under jump regression analysis
- Statistical image denoising
- Jump regression analysis and its applications
- Applications of statistical tools in various scientific research

Publication of book chapters

[2] **Mukherjee, P.S.** "Change-Point-Based Statistical Process Controls", Book title: "Springer Handbook of Engineering Statistics, 2nd ed.", Edited by Hoang Pham, Chapter 19, Publication Date: 22 April **2023**.
[Link to the chapter] [Link to the book]

[1] Calderon-Garciduenas, L., Torres-Jardon, R., Gonzalez-Maciel, A., Reynoso-Robles, R., Brito-Aguilar, R., and **Mukherjee, P.S.** "Alzheimer's Development and Progression in Urban Children and Young Adults: Nanoparticles, Mitochondria, Endoplasmic Reticulum and Cellular Havoc", Book title: "Ambient Combustion Ultrafine Particles and Health", Edited by Doug Brugge and Christina H. Fuller, Chapter 5, Publication Date: 17 February **2021**, ISBN: 978-1-53618-831-8.
[Link to the book]

Publication of research articles in peer-reviewed journals

[48] Kang, Y., Roy, A.* and **Mukherjee, P.S.** "Adaptive Blind Image Deblurring and Denoising", *Scandinavian Journal of Statistics*, To appear. DOI: 10.1111/sjos.70045.
* doctoral student
[Link to the article]

[47] Basak, S.*, Roy, A.* and **Mukherjee, P.S.** "Estimation of Piecewise Continuous Regression Function in Finite Dimension using Oblique-axis Regression Tree with Applications in Image Denoising", *Statistica Sinica*, To appear. DOI: 10.5705/ss.202025.0120.
* doctoral student
[Link to the article] [Supplementary]

[46] Roy, A.* and **Mukherjee, P.S.** "A Registration-free Approach for Image Monitoring", *Statistics and Computing*, **2026**, 36(20), 1–20.
* doctoral student
[Link to the article]

[45] Basak, S.* and **Mukherjee, P.S.** "An Efficient Image Denoising Method Integrating Multi-resolution Local Clustering and Adaptive Smoothing", *Statistical Methods & Applications*, **2025**, 34(4), 767–785.
* doctoral student
[Link to the article]

[44] Roy, A.* and **Mukherjee, P.S.** "Upper quantile-based CUSUM-type control chart for detecting small changes in image data", *Journal of Applied Statistics*, **2025**, 52(11), 2156–2171.
* doctoral student
[Link to the article]

[43] Roy, A.* and **Mukherjee, P.S.** "Image Comparison Based On Local Pixel Clustering", *Technometrics*, **2024**, 66(4), 495–506.
* doctoral student
[Link to the article]

[42] Das, S.* and **Mukherjee, P.S.** "Image Registration for Zooming Using Similarity Matching", *Journal of Data Science*, **2024**, 22(4), 558–574.
  * doctoral student
  [Link to the article]

[41] Calderon-Garciduenas, L., Cejudo-Ruiz, R., Stommel, E.W., Maciel, A.G., Robles, R.R., Torres-Jardon, R., Tehuacanero-Cuapa, S., Rodriguez-Gomez, A., Bautista, F., Goguitchaichvili, A., Perez-Guille, B., Soriano-Rosales, R.E., Koseoglu, E., and **Mukherjee, P.S.** "Single-domain magnetic particles with motion behavior under electromagnetic AC and DC fields are a fatal cargo in Metropolitan Mexico City pediatric and young adult early Alzheimer, Parkinson, Frontotemporal Lobar Degeneration and Amyotrophic Lateral Sclerosis and in ALS patients", *Frontiers in Human Neuroscience, Section: Brain Health and Clinical Neuroscience*, **2024**, 18:1411849.
  [Link to the article]

[40] Roy, A.* and **Mukherjee, P.S.** "A control chart for monitoring images using jump location curves", *Quality Engineering*, **2024**, 36(2), 439–452.
  * doctoral student
  [Link to the article]

[39] Das, S.*, Roy, A.* and **Mukherjee, P.S.** "Image registration for zooming: A statistically consistent local feature mapping approach", *Stat*, **2024**, 13(1), e664.
  * doctoral student
  [Link to the article]

[38] Calderon-Garciduenas, L., Stommel, E.W., Torres-Jardon, R., Hernandez-Luna, J., Aiello-Mora, M., Gonzalez-Maciel, A., Reynoso, R., Perez-Guille, B., Silva-Pereyra, H., Tehuacanero-Cuapa, S., Rodriguez-Gomez, A., Lachmann, I., Galaz-Montoya, C., Doty, R.L., Roy, A.*, and **Mukherjee, P.S.** "Alzheimer and Parkinson diseases, frontotemporal lobar degeneration and amyotrophic lateral sclerosis overlapping neuropathology start in the first two decades of life in pollution exposed urbanites and brain ultrafine particulate matter and industrial nanoparticles, including Fe, Ti, Al, V, Ni, Hg, Co, Cu, Zn, Ag, Pt, Ce, La, Pr and W are key players. Metropolitan Mexico City health crisis is in progress", *Frontiers in Human Neuroscience, Section: Brain Health and Clinical Neuroscience*, **2024**, 17:1297467.
  * doctoral student
  [Link to the article]

[37] Calderon-Garciduenas, L., Kulesza, R., Greenough, G.P., Garcia-Rojas, E., Revueltas-Ficachi, P., Rico-Villanueva, A., Flores-Vazquez, J.O., Brito-Aguilar, R., Ramirez-Sanchez, S., Vacaseydel-Aceves, N., Cortes-Flores, A.P., Mansour, Y., Torres-Jardon, R., Villarreal-Rios, R., Koseoglu, E., Stommel, E.W., and **Mukherjee, P.S.** "Fall Risk, Sleep Behavior, and Sleep-Related Movement Disorders in Young Urbanites Exposed to Air Pollution", *Journal of Alzheimer's Disease*, **2023**, 91(2). 847–862.
  [Link to the article]

[36] Calderon-Garciduenas, L., Stommel, E.W., Lachmann, I., Waniek, K., Chao, C.K., Gonzalez-Maciel, A., Garcia-Rojas, E., Torres-Jardon, R., Delgado-Chavez, R., and **Mukherjee, P.S.** "TDP-43 CSF Concentrations Increase Exponentially with Age in Metropolitan Mexico City Young Urbanites Highly Exposed to PM2.5 and Ultrafine Particles and Historically Showing Alzheimer and Parkinson's Hallmarks. Brain TDP-43 Pathology in MMC Residents Is Associated with High Cisternal CSF TDP-43

Concentrations", *Toxics*, **2022**, 10(10), 559.
[Link to the article]

[35] Calderon-Garciduenas, L., Hernandez-Luna, J., **Mukherjee, P.S.**, Styner, M., Chavez-Franco, D.A., Luevano-Castro, S.C., Crespo-Cortes, C.N., Stommel, E.W., Torres-Jardon, R. "Hemispheric Cortical, Cerebellar and Caudate Atrophy Associated to Cognitive Impairment in Metropolitan Mexico City Young Adults Exposed to Fine Particulate Matter Air Pollution", *Toxics*, **2022**, 10(4), 156.
[Link to the article]

[34] Calderon-Garciduenas, L.,Chavez-Franco, D., Luevano-Castro, S.C., Macias-Escobedo, E., Hernandez-Castillo, A., Carlos-Hernandez, E., Franco-Ortiz, A., Castro-Romero, S.P., Cortes-Flores, M., Crespo-Cortes, C.N., Torres-Jardon, R., Stommel, E.W., Rajkumar, R.P., **Mukherjee, P.S.**, and Research Universidad del Valle de Mexico UVM Group. "Metals, nanoparticles, particulate matter, and cognitive decline", *Frontiers in Neurology*, 12, 21 January, **2022**.
[Link to the article]

[33] Calderon-Garciduenas, L., Rajkumar, R.P., Stommel, E.W., Kulesza, R., Mansour, Y., Rico-Villanueva, A., Flores-Vazquez, J.O., Brito-Aguilar, R., Ramirez-Sanchez, S., Garcia-Alonso, G., Chavez-Franco, D., Luevano-Castro, S., Garcia-Rojas, E., Revueltas-Ficachi, P., Villarreal-Rios, R., and **Mukherjee, P.S.** "Brainstem Quadruple Aberrant Hyperphosphorylated Tau, Beta-Amyloid, Alpha-Synuclein and TDP-43 Pathology, Stress and Sleep Behavior Disorders", *International Journal of Environmental Research and Public Health*, **2021**, 18(13), Article 6689.
[Link to the article]

[32] Calderon-Garciduenas, L., Gonzalez-Maciel, A., Reynoso-Robles, R., Rodriguez-Lopez, J.L., Silva-Pereyra, H.G., Labrada-Delgado, G.J., Perez-Guille, B., Soriano-Rosales, R.E., Jimenez-Bravo Luna, M.A., Brito-Aguilar, R., **Mukherjee, P.S.**, Gayosso-Chavez, C., and Delgado-Chavez, R. "Environmental Fe, Ti, Al, Cu, Hg, Bi, and Si Nanoparticles in the Atrioventricular Conduction Axis and the Associated Ultrastructural Damage in Young Urbanites: Cardiac Arrhythmias Caused by Anthropogenic, Industrial, E-Waste, and Indoor Nanoparticles", *Environmental Science & Technology*, **2021**, 55(12), 8203–8214.
[Link to the article]

[31] Gajurel, A., Chittoori, B., **Mukherjee, P.S.**, and Sadegh, M. "Machine learning methods to map stabilizer effectiveness based on common soil properties", "Transportation Geotechnics", **2021**, 27, Article 100506.
[Link to the article]

[30] Calderon-Garciduenas, L., Gonzalez-Maciel, A., Reynoso-Robles, R., Hammond, J., Kulesza, R., Lachmann, I., Torres-Jardon, R., **Mukherjee, P.S.**, and Maher, B.A. "Quadruple abnormal protein aggregates in brainstem pathology and exogenous metal-rich magnetic nanoparticles. The substantia nigrae is a very early target in young urbanites and the gastrointestinal tract likely a key brainstem portal." "Environmental Research", **2020**, 191, Article 110139.
[Link to the article]

[29] Calderon-Garciduenas, L., Torres-Solorio, A.K., Kulesza, R., Torres-Jardon, R., Gonzalez-Gonzalez, L.O., Garcia-Arreola, B., Chavez-Franco, D.A., Luevano-Castro, S.C., Hernandez-Castillo, A., Carlos-Hernandez, E., Solorio-Lopez, E., Crespo-Cortes, C.N., Garcia-Rojas, E., **Mukherjee, P.S.**, and Re-

4

search Universidad del Valle de Mexico UVM Group. "Gait and balance disturbances are common in young urbanites and associated with cognitive impairment. Air pollution and the historical development of Alzheimer's disease in the young." "Environmental Research", **2020**, 191, Article 110087.
[Link to the article]

[28] Calderon-Garciduenas, L., Gonzalez-Maciel, A., **Mukherjee, P.S.**, Reynoso-Robles, R., Perez-Guille, B., Gayosso-Chavez, C., Torres-Jardon, R., Cross, J.V., Ahmed, I.A., Karloukovski, V.V., and Maher, B.A. "Combustion- and friction-derived magnetic air pollution nanoparticles in human hearts," *Environmental Research*, **2019**, 176, Article 108567.
[Link to the article]

[27] Calderon-Garciduenas, L., Kulesza, R.J., Mansour, Y., Aiello-Mora, M., **Mukherjee, P.S.**, and Gonzalez-Gonzalez, L.O. "Increased Gain in the Auditory Pathway, Alzheimer's Disease Continuum, and Air Pollution: Peripheral and Central Auditory System Dysfunction Evolves Across Pediatric and Adult Urbanites," *Journal of Alzheimer's Disease*, **2019**, 70(4), 1275–1286.
[Link to the article]

[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-Maciel, 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-Maciel, 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-Maciel, 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-Maciel, 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-Maciel, 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] Calderon-Garciduenas, L., González-González, L.O., Kulesza, R.J., Fech, 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]

[18] Gonzalez-Maciel, 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]

[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 PM2.5 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]

[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 Diseases*, **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.
[Link to the article]

[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.
[Link to the article]

[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 3D 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]

Publication of short communications in peer-reviewed journals

[1] Calderon-Garciduenas, L., Ayala, A., and **Mukherjee, P.S.** "2024 United States Elections: Air Pollution, Neurodegeneration, Neuropsychiatric, and Neurodevelopmental Disorders. Who Cares?" *Journal of Alzheimer's Disease*, **2024**, 98(4), 1277–1282.
[Link to the article]

Publication of review articles in peer-reviewed journals

[6] Calderon-Garciduenas, L. Hernandez-Luna, J., Aiello-Mora, M., Brito-Aguilar, R., Evelson, P.A., Villarreal-Rios, R., Torres-Jardon, R., Ayala, A., and **Mukherjee, P.S.** "APOE Peripheral and Brain Impact: APOE4 Carriers Accelerate Their Alzheimer Continuum and Have a High Risk of Suicide in $PM_{2.5}$ Polluted Cities", *Biomolecules*, 13(6), 927, 31 May **2023**.
[Link to the article]

[5] Calderon-Garciduenas, L., Torres-Jardon, R., Greenough, G.P., Kulesza, R., Reynoso-Robles, R., Garcia-Alonso, G., Chavez-Franco, D.A., Garcia-Rojas, E., Brito-Aguilar, R., Silva-Pereyra, H.G., Ayala, A., Stommel, E.W., and **Mukherjee, P.S.** "Sleep matters: Neurodegeneration spectrum heterogeneity, combustion and friction ultrafine particles and industrial nanoparticle pollution and sleep disorders. Denial is not an option", *Frontiers in Neurology*, 14, 27 February **2023**.
[Link to the article]

[4] Calderon-Garciduenas, L., Stommel, E.W., Rajkumar, R.P., **Mukherjee, P.S.**, and Ayala, A. "Particulate Air Pollution and Risk of Neuropsychiatric Outcomes. What We Breathe, Swallow, and Put on Our Skin Matters", *International Journal of Environmental Research and Public Health*, **2021**, 18(21), Article 11568.
[Link to the article]

[3] Calderon-Garciduenas, L., Torres-Jardon, R., Franco-Lira, M., Kulesza, R., Gonzalez-Maciel, A., Reynoso-Robles, R., Brito-Aguilar, R., Garcia-Arreola, B., Revueltas-Ficachi, P., Barrera-Velazquez, J.A., Garcia-Alonso, G., Garcia-Rojas, E., **Mukherjee, P.S.**, and Delgado-Chavez, R. "Environmental Nanoparticles, SARS-CoV-2 Brain Involvement, and Potential Acceleration of Alzheimer's and Parkinson's Diseases in Young Urbanites Exposed to Air Pollution", *Journal of Alzheimer's Disease*, **2020**, 78(2), 479–503.
[Link to the article]

[2] Calderon-Garciduenas, L., Torres-Jardon, R., Kulesza, R.J., Mansour, Y., Gonzalez-Gonzalez, L.O., Gonzalez-Maciel, A., Reynoso-Robles, R., and **Mukherjee, P.S.**, "Alzheimer disease starts in childhood in polluted Metropolitan Mexico City. A major health crisis in progress", *Environmental Research*, **2020**, Article 109137.
[Link to the article]

[1] Calderon-Garciduenas, L., Gonzalez-Maciel, A., Kulesza, R., Gonzalez-Gonzalez, L.O., Reynoso-Robles, R., **Mukherjee, P.S.**, and Torres-Jardon, R., "Air Pollution, Combustion and Friction Derived Nanoparticles, and Alzheimer's Disease in Urban Children and Young Adults", *Journal of Alzheimer's Disease*, **2019**, 70(2), 343–360.
[Link to the article]

Publication of articles in the e-book series "Advances in Alzheimer's Disease" by IOS Press

[8] Calderon-Garciduenas, L., Torres-Jardon, R., Franco-Lira, M., Kulesza, R., Gonzalez-Maciel, A., Reynoso-Robles, R., Brito-Aguilar, R., Garcia-Arreola, B., Revueltas-Ficachi, P., Barrera-Velazquez, J.A., Garcia-Alonso, G., Garcia-Rojas, E., **Mukherjee, P.S.**, and Delgado-Chavez, R. "Environmental Nanoparticles, SARS-CoV-2 Brain Involvement, and Potential Acceleration of Alzheimer's and Parkinson's Diseases in Young Urbanites Exposed to Air Pollution", E-book series: Advances in Alzheimer's Disease, Volume 8: Alzheimer's Disease and Air Pollution, Edited by Lilian Calderon-Garciduenas, **2021**, 567–591.
[Link to the article]

[7] 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," E-book series: Advances in Alzheimer's Disease, Volume 8: Alzheimer's Disease and Air Pollution, Edited by Lilian Calderon-Garciduenas, **2021**, 511–521.
[Link to the article]

[6] 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-Maciel, 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," E-book series: Advances in Alzheimer's Disease, Volume 8: Alzheimer's Disease and Air Pollution, Edited by Lilian Calderon-Garciduenas, **2021**, 495–509.
[Link to the article]

[5] 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 PM2.5 Urbanites: The Risk of Alzheimer's and Parkinson's Diseases in Young Mexico City Residents," E-book series: Advances in Alzheimer's Disease, Volume 8: Alzheimer's Disease and Air Pollution, Edited by Lilian Calderon-Garciduenas, **2021**, 477–493.
[Link to the article]

[4] Calderon-Garciduenas, L., Kulesza, R.J., Mansour, Y., Aiello-Mora, M., **Mukherjee, P.S.**, and Gonzalez-Gonzalez, L.O. "Increased Gain in the Auditory Pathway, Alzheimer's Disease Continuum, and Air Pollution: Peripheral and Central Auditory System Dysfunction Evolves Across Pediatric and Adult Urbanites," E-book series: Advances in Alzheimer's Disease, Volume 8: Alzheimer's Disease and Air Pollution, Edited by Lilian Calderon-Garciduenas, **2021**, 465–476.
[Link to the article]

[3] 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-Maciel, 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," E-book series: Advances in Alzheimer's Disease, Volume 8: Alzheimer's Disease and Air Pollution, Edited by Lilian Calderon-Garciduenas, **2021**, 465–476.
[Link to the article]

[2] Calderon-Garciduenas, L., Gonzalez-Maciel, A., Kulesza, R., Gonzalez-Gonzalez, L.O., Reynoso-Robles, R., **Mukherjee, P.S.**, and Torres-Jardon, R., "Air Pollution, Combustion and Friction Derived Nanoparticles, and Alzheimer's Disease in Urban Children and Young Adults", E-book series: Advances in Alzheimer's Disease, Volume 8: Alzheimer's Disease and Air Pollution, Edited by Lilian Calderon-Garciduenas, **2021**, 87–104.
[Link to the article]

[1] Gonzalez-Maciel, 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," E-book series: Advances in Alzheimer's Disease, Volume 8: Alzheimer's Disease and Air Pollution, Edited by Lilian Calderon-Garciduenas,

2021, 49–68.
[Link to the article]

Student advising and mentoring

- PhD thesis in Statistics (Indian Statistical Institute, Kolkata):

  ∗ Anik Roy, Thesis title: "Statistical Monitoring of Image Data under Jump Regression Framework", Date of thesis defense: 14 January 2025. Link to the thesis: `https://dspace.isical.ac.in/jspui/handle/10263/7490`.

- Master's project (Indian Statistical Institute, Kolkata):

  - Subhrangsu Bhunia (Spring 2025), Project title: Edge Monitoring in Images.
  - Sirsha Dey (Spring 2025), Project title: Blind Image Deblurring.
  - Sagnik Biswas (Spring 2024), Project title: Creation of a Novel Image Restoration Method which uses Applications of Random Forests for Image Denoising.
  - Shubham Kumar Parida (Spring 2024), Project title: Image restoration techniques using Random Forests.
  - Subhra Patra (Spring 2024), Project title: Image Restoration Techniques using jump location curves and random forest.
  - Mousam Sinha (Spring 2023), Project title: Jump Regression in Presence of Outliers.
  - Arjama Das (Spring 2022), Project title: On Image Denoising Under Poisson Noise.
  - Sujoy Kumar Bhadra (Spring 2021), Project title: Detection of Change Points in Time Series.
  - Anirban Mandal (Spring 2021), Project title: Difference Detection Between Multiple Images.

- Master's thesis (MATH 593, Boise State University):

  - Samuel Anyaso-Samuel, Thesis title: Dynamic Sampling Versions of Popular SPC Charts for Big Data Analysis, Graduation: Spring 2019.

- 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.

- 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 students' 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

- Regular courses taught at Indian Statistical Institute, Kolkata:

  - Spring 2026 (Current Semester): Design of Experiments, required course for B.Stat. third-year students.
  - Fall 2025: Statistical Methods, an optional course for M.Tech (Computer Science) students.
  - Spring 2025: Design of Experiments, required course for B.Stat. third-year students.
  - Fall 2024: International Statistical Education Center (ISEC) Module: Descriptive Statistics. Taught this course jointly with Spandan Ghoshal (Junior Research Fellow).
  - Fall 2024: Statistical Methods, an optional course for M.Tech (Computer Science) students.
  - Spring 2024: Statistical Modeling (generalized linear models, Bayesian methods, survival analysis), required course for Post Graduate Diploma on Statistical Methods and Analytics (PGDSMA) students at Tezpur campus. Taught this course jointly with Anik Roy (Senior Research Fellow).
  - Fall 2023: Statistical Methods, an optional course for M.Tech (Computer Science) students.
  - Spring 2023: Statistical Modeling (generalized linear models, Bayesian methods, survival analysis), required course for Post Graduate Diploma on Statistical Methods and Analytics (PGDSMA) students at Tezpur and Chennai campuses. Taught this course jointly with Anik Roy (Senior Research Fellow).
  - Fall 2022: Statistical Methods, an optional course for M.Tech (Computer Science) students.
  - Spring 2022: Design of Experiments, required course for B.Stat. third-year students. Taught this course jointly with Subhasish Basak (Senior Research Fellow).
  - Spring 2022: Statistical Methods II (multivariate statistical methods), required course for Post Graduate Diploma on Statistical Methods and Analytics (PGDSMA) students at Tezpur and Chennai campuses.
  - Fall 2021: Regression Techniques, required course for M.Stat., B-Stream, first-year students.

- Fall 2020: Linear Models (part-course), required course for M.Stat., NB-Stream, first-year students.
- Fall 2020: Categorical Data Analysis, required course for M.Stat., B-Stream, first-year students.
- Spring 2020: Nonparametric and Sequential Methods, required course for B.Stat. third-year students.
- Fall 2019: International Statistical Education Center (ISEC) Modules: Probability and Statistical Methods I.

- Short courses taught at Indian Statistical Institute, Kolkata:

  - Indian Technical and Economic Cooperation (ITEC) course on "Data Analytics for Decision Making" organized by International Statistical Education Center (ISEC), July, 2025, Topic: Cross-Validation.
  - Indian Technical and Economic Cooperation (ITEC) course on "Data Analytics for Decision Making" organized by International Statistical Education Center (ISEC), February - March, 2025, Topic: Cross-Validation.
  - Winter workshop organized by Interdisciplinary Statistical Research Unit (ISRU), February - March, 2025, Topic: One-way and two-way ANOVA.
  - Indian Technical and Economic Cooperation (ITEC) course on "Data Analytics for Decision Making" organized by International Statistical Education Center (ISEC), February - March, 2024, Topic: Generalized linear models with R.
  - Winter workshop organized by Interdisciplinary Statistical Research Unit (ISRU), November - December, 2023, Topic: Regression diagnostics including model selection, with R.
  - Winter workshop organized by Interdisciplinary Statistical Research Unit (ISRU), March 2022, Topics: ANOVA (one-way and two-way) and regression techniques for simple linear regression.
  - Indian Technical and Economic Cooperation (ITEC) online course on "Big Data Analytics for Policy Planners" organized by International Statistical Education Center (ISEC), March - April, 2021, Topics: Cross-Validation and Predictive Analytics.

- Courses taught as Instructor at Boise State University:

  - MATH 574, *Linear Models*: Spring 2019, 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*: Spring 2019, 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 – 2024.

[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

[9] "Image Denoising and Deblurring under Jump Regression Framework", 2nd Frontier Symposium in Data Science 2025 (FS-DSC 2025), Indian Institute of Science Education & Research (IISER), Thiruvananthapuram, 01 February 2025.

[8] "A feature-based image comparison method", International Indian Statistical Association (IISA) conference, Cochin University of Science and Technology, Kochi, India, 29 December 2024.

[7] "Medical Image Comparison Using Image Features", 2nd ISSAT (International Society of Science and Applied Technologies) Conference on Data Science in Business, Finance and Industry, Dong A University, Da Nang, Vietnam, 10 January 2023.

[6] "Image denoising and deblurring using jump regression and local pixel clustering", International Indian Statistical Association (IISA) conference, Indian Institute of Science, Bengaluru, India, 29 December 2022.

[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, 19 May 2018.

[4] "Phase II Monitoring of Big Data by Data Pruning", Workshop on SPC for Big Data Streams, Nankai University, Tianjin, China, 09 July 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, 08 April 2017.

[2] "Image Denoising by Non-parametric Local Smoothing", Undergraduate Seminar, Boise State University, USA, 07 December 2012.

[1] "Efficient Bias Correction For MRI Image Denoising", International Indian Statistical Association (IISA) conference, North Carolina State University, USA, 23 April 2011.

Selected Contributed Lectures

[9] "An image comparison method based on local pixel clustering", ISI-ISM-ISSAS Joint Conference 2025, Tokyo, Japan, 05–07 March 2025. This was a three Institute joint conference participated by Indian Statistical Institute (ISI), The Institute of Statistical Mathematics (ISM), and Institute of Statistical Science Academia Sinica (ISSAS).

[8] "On image comparisons and image monitoring", ISI-ISM-ISSAS Joint Conference 2023, Kolkata, India, 27–29 December 2023. This was a three Institute joint conference participated by Indian Statistical Institute (ISI), The Institute of Statistical Mathematics (ISM), and Institute of Statistical Science Academia Sinica (ISSAS).

[7] "Image denoising and deblurring using jump regression analysis", NU-ISI Biomedical Data Science Online Workshop, held online on 01 March 2022. This workshop was organized by Nagasaki University (NU) and Indian Statistical Institute (ISI).

[6] "Image restoration using local pixel clustering and jump regression", ISI-ISM-ISSAS Joint Conference 2022, held online during 13–15 January 2022. This was a three Institute joint conference participated by Indian Statistical Institute (ISI), The Institute of Statistical Mathematics (ISM), and Institute of Statistical Science Academia Sinica (ISSAS).

[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, 03 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, 30 June 2016.

[3] "An efficient 3-D image denoising with applications in medical imaging", Western North American Region (WNAR) Meetings, Boise State University, USA, 15 June 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, 18 June 2014.

[1] "Image Details Preserving Image Denoising by Local Clustering", Eastern North American Region (ENAR) Meetings, Orlando, USA, 13 March 2013.

Selected service to the community and profession

- Editorial service for journals:

    [1] Associate Editor of *Sankhya, Series A*: August 2024 – Present.

    [2] Technical Editor of *Sankhya, Series A*: April 2025 – Present.

    [3] Editorial Board Member of *International Journal of Reliability, Quality and Safety Engineering*: October 2020 – Present.

- Refereed for the following journals:
  Applied Sciences, *Biomedical Signal Processing and Control*, *Biometrical Journal*, *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*, *IEEE Access*, *IET Image Processing*, *International Journal of Imaging Systems and Technology*, *International Journal of Information Fusion*, *International Journal of Production Research*, *Journal of Computational and Graphical Statistics*, *Journal of Imaging*, *Journal of Machine Learning Research*, *Journal of Quality Technology*, *Journal of the American Statistical Association*, *Mathematics*, *Remote Sensing*, *Sankhya-Series B*, *Sensors*, *Signal, Image and Video Processing*, *Signal Processing*, *Social Science & Medicine*, *Statistical Papers*, *Statistics in Medicine*, *Sustainable Computing: Informatics and Systems*, *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.