116 W University Pkwy, Apt 1135, Baltimore, MD 21210
ddey1@alumni.jh.edu | debangan.dey@nih.gov
Webpage : debangandey.rbind.io
+1(443)-562-2820

Debangan Dey

Summary

- Biostatistician with ten years of rigorous training in statistics, expertise in statistical inference, machine learning, Bayesian modeling, and developing statistical methodologies.
- Research interests are multilevel mixed longitudinal data, highly multivariate spatial data, with applications to *wearables*, *mobile health*, *ecological momentary assessment*, *mental health*, *environmental sciences* and *sports analytics*.

Education

Johns Hopkins Bloomberg School of Public Health, Baltimore, USA
PhD in Biostatistics — *Aug 2017 - May 2022*

Indian Statistical Institute, Kolkata, India
Master of Statistics, First Division with Distinction — *July 2015 - May 2017*

Indian Statistical Institute, Kolkata, India
Bachelor of Statistics, First Division with Distinction — *July 2012 - May 2015*

Professional Experience

National Institute of Mental Health
Visiting Fellow — *(May 2022 - Current)*
- Lead statistical analyses of mobile health data in mMarch consortium (22 sites across the globe).

National Institute of Mental Health
Pre-doctoral fellow — *Sep 2019 - May 2021, Sep 2021 - May 2022*
- Develop methods to model dynamic associations between mood, activity and chemical biomarkers.

Amazon
Applied Scientist Intern — *May 2021 - Aug 2021*
- Invent statistical tools to improve search experimentation in Amazon search relevance team.

Baltimore City Health Department - JHSPH Data Analysis Support Team
Analyst — *April 2020 - October 2020*
- Designed COVID-19 risk scores to identify unmet testing needs within Baltimore.
- Collaborate weekly with BCHD to assist on ever-emerging issues arising from the pandemic.

Johns Hopkins Bloomberg School of Public Health
Graduate student — *Aug 2017 - May 2022*
- Develop methods to jointly model and create networks in mixed datatypes.
- Designed graphical processes to analyze highly multivariate spatio-temporal data.

Summer Intern under Prof. Vadim Zipunnikov — *May 2016 - July 2016 & May 2015 - July 2015*
- Conducted research in wearables to investigate multi-faceted health impact of physical activity.

Publications and Repositories

Dey D., Ghosal R., Zipunnikov V., Covariance Estimation and Principal Component Analysis for Mixed-Type Functional Data with application to mHealth in Mood Disorders. Arxiv

Dey D., Banerjee S., Lindquist M., Datta A., Graph-constrained Analysis for Multivariate Functional Data. Arxiv

Lateef T., **Dey D.**, Leroux A., Zipunnikov V., Merikangas K., Influences of mood, energy and sleep on incident headache assessed with prospective real time electronic assessments, Submitted to *Journal of Neurology, Neurosurgery, and Psychiatry*.

Stapp E., Zipunnikov V., Leroux A., Cui L., Husky M., **Dey D.**, Merikangas K. Specificity of Affective Dynamics of Bipolar and Major Depressive Disorder. Brain and Behavior, Aug 2023

Glaus J., Kang S., Guo W., Lamers F., Strippoli M., Leroux A., **Dey D.**, Plessen K., Vaucher J., Vollenweider P., Zipunnikov V., Merikangas K., Preisig M., Objectively assessed sleep and physical activity in depression subtypes and its mediating role in their association with cardiovascular risk factors. Journal of Psychiatric Research, July 2023 .

Dey D., Zipunnikov V., Semiparametric Gaussian Copula Regression Modelling for Mixed Data Types (2022) **Arxiv.**

Dey D., Datta A., Banerjee S. Graphical Gaussian Process Models for Highly Multivariate Spatial Data (2021). Biometrika, Dec 2021

Kaufman M., **Dey D.**, Crainiceanu C., Dredze M., #MeToo and Related Google Inquiries into Sexual Violence: Does a Hash-tag Campaign sustain Information Seeking? (2021) Journal of interpersonal violence, p.0886260519868197.

Dey D., Zipunnikov V., Discussion of "An epidemiological forecast model and software assessing interventions on the COVID-19 epidemic in China" (2020). Journal of Data Science 18.3: 433-436.

Dey D., Zipunnikov V., Connecting population-level AUC and latent scale-invariant R^2 via Semiparametric Gaussian Copula and rank correlations (2019) **Arxiv.**

Dey D., Leroux A., The good, the bad and the ugly of the beautiful game: micro-analysing FIFA World Cup 2018 (2019) Github.

Dey D., Deb S., The Shooting Prowess: Spatial modelling of shots in soccer to single out goalscoring ability. (2019). Journal of Sports Analytics, 5.4: 281-297.

Varma V., **Dey D.**, Leroux, A., Di, J., Urbanek, J., Xiao, L., Zipunnikov V., Total volume of physical activity: TAC, TLAC, or TAC(λ). (2018) Preventive Medicine:106, p.233-235.

Varma V., **Dey D.**, Leroux A., Di J., Urbanek J., Xiao L., Zipunnikov V., Re-evaluating the effect of age on physical activity over the lifespan. (2017) Preventive Medicine,101, pp.102-8(*Article featured at TIME, Washington Post, WSJ, BBC, WPYR and others*).

Spira A., Zipunnikov V., Wu M., **Dey D.**, Simonsick E., Ferucci L., Davatzikos C., Resnick C., Association of Circadian Rest/Activity Rhythms with Brain Volumes in Cognitively Normal Older Adults. (2017) Innovation in Aging 1.suppl 1: 866-866

Zipunnikov V., **Dey D.**, Leroux A., Di J., Urbanek J., Shrack J., Crainiceanu C., Total physical activity and its circadian allocation are independent predictors of mortality. (2017). Innovation in Aging 1.Suppl 1: 1239.

Dey D., Zipunnikov V., Gayananova I., Network approach for joint modelling of binary and continuous measurements in large health surveys and its application to frailty and mortality in NHANES 1999-2010. (2020) Work in progress.

Dey D., Leroux A., Zipunnikov V., Swaminathan A., Merikangas K., Investigating the relationship of overnight change in salivary cortisol with daily emotional states using mobile technologies. Work in Progress.

Clore-Gronenborn K., **Dey D.**, Leroux A., Zipunnikov V., Merikangas K., Investigating the interrelationships of sleep, emotion, and cortisol using mobile technologies in a community-based sample, Work in progress.

Conferences, Awards & Achievements

- Organized the session "Recent developments in methods for digital Brain Health data" at JSM 2023 and presented the talk "Covariance Estimation and Principal Component Analysis for Mixed-Type Functional Data with application to mHealth in Mood Disorders".
- Presented the poster *Influences of mood, energy and sleep on incident headache assessed with prospective real time electronic assessments* at the *2022, 24th Anuual NIMH IRP Scientific Training Day.*
- Presented the talk *Using Mobile Technologies to Investigate Impaired Sleep, Mood, and Energy as Real-Time Triggers of Migraine*, ICAMPAM 2021.
- Presented the talk *Modelling of mixed type intensive longitudinal data via Semiparametric Gaussian Copula and its application to real-time mobile monitoring of daily health behaviours* at MASS 2021.
- Joint Statistical Meetings 2021 paper award from the *Section on Bayesian Statistical Science* of American Statistical Association
- One among the chosen six to present at **Opta Pro Fourm, 2021**, one of the biggest soccer analytics conferences attended by professionals from over 80 clubs and federations worldwide.

- Joint Statistical Meetings 2020 paper award from the *Section on Survey Research and Methods* of American Statistical Association
- Cleared *Regional Mathematical Olympiad* in 2011 and in 2012.
- Awarded the INSPIRE scholarship administered by DST, Govt. of India.
- Secured a rank of 2754 (inside **top 0.1%**) in IITJEE 2012 amongst 15,00,000 candidates.
- Ranked among top 5% in SAARC Countries in UNESCO Science Olympiad 2011.

Skills

- **Technical strength:** Proficient in R, Python, Spark, LaTeX, learning C++, HTML.
- **Languages Known**: English, Bengali, Hindi; learning Spanish.

References

- **Dr. Vadim Zipunnikov (Advisor)**: vzipunn1@jhu.edu
- **Dr. Abhirup Datta (Co-advisor)**: abhidatta@jhu.edu
- **Dr. Sudipto Banerjee (Collaborator)**: sudipto@ucla.edu

Other Information

Positions of Responsibility:

- Reviewer at Journal of Computational and Graphical Statistics.
- Worked as teaching assistants for nine graduate and undergraduate level statistics courses.
- Former instructor at Ramanujan School of Mathematics for two years, giving lessons on advanced high school mathematics.
- Founder and chief-editor at Sports-Nova, a famous multi-sports news website.
- Former columnist at Indian Football Network.
- Sponsorship head and core-committee member of annual techno-cultural-sports fest (*Integration*) of Indian Statistical Institute, Kolkata in 2015 and 2016.

Extra-curricular Achievements:

- One of the top five finalists at US Soccer Hackathon 2018, Chicago, USA, July 14-15, 2018. Presented work on how to quantify passing and defending attributes in soccer and use it in real-time to enforce effective and timely substitutions.
- Progressed to the final round in Economic Times Power of Ideas 2015 Challenge, India's biggest hunt for innovative business ideas.
- 1st prize in **Jog Biyog**, an inter-school state level trivia competition.
- 1st prize in a state-level inter-school debate competition in 2008.

Hobbies: Playing soccer, swimming, cooking, baking, traveling.