

# JUNRUI DI

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## STATISTICAL METHODS RESEARCH INTERESTS

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feature engineering from accelerometry signals, matrix and tensor decompositions, dimension reduction, functional data analysis, integration of multiple modalities.

## SCIENTIFIC RESEARCH INTERESTS

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wearable devices and their applications in public health (e.g. mental health and aging), physical activity assessment, sleep, circadian rhythmicity.

## EDUCATION

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**Johns Hopkins Bloomberg School of Public Health**

Expected: *May 2019*

Ph.D. in Biostatistics

Advisor: Vadim Zipunnikov, Ph.D.

**Georgetown University**

*Dec 2013*

M.S. in Biostatistics

Thesis: *Robust Integrative Analysis of Multi-Block Contaminated Datasets*

Advisor: Valeriy Korostyshevskiy, Ph.D.

**University of California, Berkeley**

*May 2012*

B.A. in Applied Mathematics

*High Distinction General Scholarship (roughly equivalent to Magna Cum Laude)*

## EXPERIENCE

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**Research Assistant**

*Jun 2015 - Present*

*Johns Hopkins Bloomberg School of Public Health*

*Baltimore, MD*

Advisor: Vadim Zipunnikov, Ph.D.

**Research Assistant**

*May 2013 - Apr 2014*

*Georgetown University, Medicine*

*Washington, DC*

Advisor: Michael Plankey, Ph.D.

**Research Assistant**

*Sep 2012 - May 2013*

*Georgetown University, Biostatistics*

*Washington, DC*

Advisor: George Luta, Ph.D. and Valeriy Korostyshevskiy, Ph.D.

## PUBLICATIONS

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### Published / In Press

1. Grigsby, M., **Di, J.**, Leroux, A., Xiao, L., Zipunnikov, V., Crainiceanu, C., and Checkley, W.. Novel metrics for growth model selection. *Emerging Themes in Epidemiology*. 2018; 15(1): 4.
2. Urbanek, J., Spira, A., **Di, J.**, Leroux, A., Crainiceanu, C., and Zipunnikov, V.. Epidemiology of objectively measured bedtime and chronotype in US adolescents and adults: NHANES 2003-2006. *Chronobiology International*. 2018; 35(3): 416-434.

3. Varma, V., Dey D., Leroux A., **Di, J.**, Urbanek, J., Xiao, L., and Zipunnikov, V.. Total volume of physical activity: TAC, TLAC or TAC( $\lambda$ ). *Preventive Medicine*. 2018; 106: 233-235.
4. Varma, V., Dey D., Leroux A., **Di, J.**, Urbanek, J., Xiao, L., and Zipunnikov, V.. Re-evaluating the effect of age on physical activity over the lifespan. *Preventive Medicine*. 2017; 101: 102-108.
5. **Di, J.**, Li, Y., Friedman, MR., Reddy, S., Surkan, PJ., Shoptaw, S., and Plankey, M.. Determining survey satisficing of online longitudinal survey data in the Multicenter AIDS Cohort Study using a Group-Based Trajectory Analysis. *Journal of Medical Internet Research Public Health and Surveillance*. 2016; 2(2): e150.

### Preprints

6. **Di, J.**, Leroux, A., Urbanek, J., R., Varadhan, Spira, A., Schrack, J., and Zipunnikov, V.. Patterns of sedentary and active time accumulation are associated with mortality in US adults: The NHANES study. *bioRxiv: 182337*. (Under review *PLoS ONE*).

### Under Review / Revision

7. Zipunnikov, V., Dey, D., Leroux, A., **Di, J.**, Urbanek, J., Harris, T., and Crainiceanu, C.. Objectively measured late-morning physical activity predicts mortality in the NHANES 2003-2006 cohorts. Resubmitted to *PLoS ONE* after revision.
8. Johns, J., **Di, J.**, Merikangas, K., Cui, L., Swendsen, J., and Zipunnikov, V.. Fragmentation as a novel measure of stability in normalized trajectories of mood and attention assessed by electronic diaries. Under review *Physiological Measurement*.
9. **Di, J.**, Spira, A., Bai, J., Urbanek, J., Leroux, A., Wu, M., Resnick, S., Simonsick, E., Ferrucci, L., Schrack, J., and Zipunnikov, V.. Joint and individual representation of domains of physical activity, sleep, and circadian rhythmicity. Under review *Statistics in Biosciences*.
10. Leroux, A., **Di, J.**, Smirnova, E., McGuffey, E., Cao, Q., Bayatmokhtari, E., Tabacu, L., Zipunnikov, V., Urbanek, J., Crainiceanu, C.. Organizing and analyzing the activity data in NHANES. Under review *Statistics in Biosciences*.
11. Schmidt, A., Bosse, M., Frey, K., **Di, J.**, OToole, R., Stinner, D., Westberg, G., Scharfstein, D., Zipunnikov, V., MacKenzie, E., and METRC. Is continuous near-infrared spectroscopy a reliable method to monitor development of acute compartment syndrome in patients with lower leg injuries? Resubmitted to *The Journal of Bone & Joint Surgery*.

### In Preparation

12. Capturing enhanced information with higher-order tensorial statistics and predicting mortality from accelerometry-measured physical activity.

### SOFTWARES

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1. **actigraphy** (R package). Feature extraction from minute level actigraphy/accelerometry data.  
<https://github.com/junruidi/actigraphy>.

### PRESENTATIONS

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1. Integrative Analysis of Multi-Block Contaminated Datasets (topicl contributed). *2013 JSM, Montreal, Canada*
2. Fragmentation of Physical Activity and Its Application (poster). *2016 Baltimore Aging Showcases, Baltimore, MD*

3. Novel Statistical Framework to Quantify Fragmentation of Physical Activity (contributed). *2017 ENAR, Washington, DC.*
4. Fragmentation of Physical Activity and Its Application (oral). *2017 ICAMPAM, Bethesda, MD.*
5. Fragmentation of Daily Physical Activity: Prediction of Mortality in NHANES 2003-2006 (oral). *2017 IAGG, San Francisco, CA.*
6. Analysis of Tensor Cumulants and Its Application to NHANES (contributed). *2018 ENAR, Atlanta, GA*

## EDITORIAL ACTIVITIES

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### Referee for:

Journal of Statistical Software (JSS) [1]

International Association of Gerontology and Geriatrics 2017 World Congress (IAGG) [1]

Journal of Medical Internet Research Cardio (JMIR Cardio) [1]

Journal of Medical Internet Research Mental Health (JMIR Mental Health) [1]

Journal of Medical Internet Research mHealth and uHealth (JMIR mHealth and uHealth) [1]

Interactive Journal of Medical Research [1]

## PROFESSIONAL ACTIVITIES

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Organizer of the JHSPH Biostatistics Computing Club 2015 - 2016

Session chair, JSM 2017

## HONORS & AWARDS

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The June B. Culley Award *Dec 2017*

*This award honors outstanding achievement by a Biostatistics student on his or her schoolwide examination paper.*

The Louis I. and Thomas D. Dublin Award *Mar 2017*

*This award, which is for the Advancement of Epidemiology and Biostatistics, supports those students whose research focuses on the effective use of statistical reasoning and methods in epidemiology.*

Washington Statistical Society Outstanding Graduate Student Award *Jun 2013*

*This award is presented by the Washington Statistical Society to the outstanding full-time graduate student of statistics/biostatistics at each university in the Washington metropolitan area with a graduate statistics/biostatistics program.*

Phi Beta Kappa Honor Society Inductee *May 2012*

*Phi Beta Kappa Honor Society*

## TEACHING EXPERIENCE

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PH.140.623 - **Lab Instructor** Statistical Methods in Public Health III *Spring 2018*

PH.140.621 - **Lab Instructor** Statistical Methods in Public Health I *Fall 2017*

PH.140.623-4 - <b>TA</b> Statistical Methods in Public Health III-IV	<i>Spring 2017</i>
PH.140.621-2 - <b>TA</b> Statistical Methods in Public Health I-II	<i>Fall 2016</i>
PH.140.753-4 - <b>TA</b> Advanced Methods in Biostatistics III-IV	<i>Spring 2016</i>
PH.140.751-2 - <b>TA</b> Advanced Methods in Biostatistics I-II	<i>Fall 2015</i>
BIST 514 - <b>TA</b> Linear Modeling & Multivariate Analysis	<i>Spring 2014</i>

## **PROFESSIONAL MEMBERSHIP**

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Americal Statistical Association (ASA)  
Washington Statistical Society (WSS)  
International Biometric Society (ENAR)

## **CERTIFICATIONS**

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SAS Certified Advanced Programmer for SAS 9	<i>Aug 2013</i>
SAS Certified Base Programmer for SAS 9	<i>Jul 2013</i>

## **COMPUTING SKILLS**

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Proficient: R, SAS  
Experienced: Matlab, MySQL, and Python