

# Jun Young (Jun) Park

## Contact Information

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## Current Position

July 2020 - **Assistant Professor**, University of Toronto  
Department of Statistical Sciences and Department of Psychology (joint appointment)  
June 2021 - **Affiliate Scientist (status-only)**, The Centre for Addiction and Mental Health (CAMH)

## Research Interests

Methodological: Modeling of correlated data (multivariate time-series, spatiotemporal data);  
Resampling-based inference (permutation and bootstrapping);  
Integration of high-dimensional data.  
Scientific: Neuroimaging, data integration, statistical genetics and genomics

## Education

May 2020 **PhD in Biostatistics**, University of Minnesota – Twin Cities  
Advisor: Mark Fiecas  
June 2012 **BA in Mathematics/Statistics**, Carleton College

## Publications & Manuscripts

♦: Student author      \*: Corresponding author

### *Published/accepted*

1. ♦Rongqian Zhang, ♦Linxi Chen, Lindsay D. Oliver, Aristotle N. Voineskos, \***Jun Young Park**.  
SAN: Mitigating spatial covariance heterogeneity in cortical thickness data from multiple sites or scanners.  
*Human Brain Mapping* (in press), 2024. BioRxiv: 10.1101/2023.12.04.569619
2. ♦Ruyi Pan, Erin W. Dickie, Colin Hawco, Nancy Reid, Aristotle N. Voineskos, \***Jun Young Park**.  
Spatial-extent inference for testing variance components in reliability and heritability studies.  
*Imaging Neuroscience*, 2024. doi: 10.1162/imag\_a\_00058
3. ♦Rongqian Zhang, Lindsay D. Oliver, Aristotle N. Voineskos, \***Jun Young Park**.  
RELIEF: a structured multivariate approach for removal of latent inter-scanner effects.  
*Imaging Neuroscience*, 2023. doi: 10.1162/imag\_a\_00011  
# This manuscript won a student paper award (runner-up) for SMI 2022.
4. ♦Nichole R. Bouffard, Ali Golestani, Iva K. Brunec, Buddhika Bellana, **Jun Young Park**, Morgan D. Barense, Morris Moscovitch.  
Single voxel autocorrelation uncovers gradients of temporal dynamics in the hippocampus and entorhinal cortex during rest and navigation.  
*Cerebral Cortex*, 2023, 33(6): 3265-3283. doi: 10.1093/cercor/bhac480
5. ♦Sarah M. Weinstein, Simon N. Vandekar, Erica B. Baller, ♦Danni Tu, Azeez Adebimpe, Tinashe M. Tapera, Ruben C. Gur, Raquel E. Gur, John Detre, Armin Raznahan, Aaron F. Alexander-Bloch, Theodore D. Satterthwaite, Russell T. Shinohara, \***Jun Young Park**.  
Spatially-enhanced clusterwise inference for testing and localizing intermodal correspondence.  
*Neuroimage*, 2022, 255, 119712. doi: 10.1016/j.neuroimage.2022.119712
6. \***Jun Young Park**, Mark Fiecas  
CLEAN: Leveraging spatial autocorrelation in neuroimaging data in clusterwise inference.  
*Neuroimage*, 2022, 255, 119192. doi: 10.1016/j.neuroimage.2022.119192
7. Eric F. Lock, **Jun Young Park**, Katherine A. Hoadley

Bidimensional linked matrix factorization for pan-omics pan-cancer analysis.

*Annals of Applied Statistics*, 2022, 16(1): 193-215. doi: 10.1214/21-AOAS1495

8. \***Jun Young Park**, Mark Fiecas  
Permutation-based inference for spatially localized signals in longitudinal MRI data.  
*Neuroimage*, 2021, 239, 118312. doi: 10.1016/j.neuroimage.2021.118312  
# This manuscript won a student paper award for ASA Statistics in Imaging student paper competition 2020.
9. \***Jun Young Park**, Joerg Polzehl, Snigdhasu Chatterjee, André Brechmann, Mark Fiecas  
Semiparametric modeling of time-varying activation and connectivity in task-based fMRI data.  
*Computational Statistics & Data Analysis*, 2020, 150, 107006. doi: 10.1016/j.csda.2020.107006  
# This manuscript won a student paper award for SMI 2019 and ASA Statistics in Imaging student paper competition 2019.
10. **Jun Young Park**, Eric F. Lock  
Integrative factorization of bidimensionally linked matrices.  
*Biometrics*, 2020, 76(1):61-74. doi: 10.1111/biom.13141
11. Chong Wu, **Jun Young Park**, Weihua Guan, Wei Pan  
An adaptive gene-based test for methylation data.  
*BMC Proceedings*, (Genetic Analysis Workshop (GAW) 20), 2018, 12(Supp 1):68. doi: 10.1186/s12919-018-0126-9
12. **Jun Young Park**, Chong Wu, Wei Pan  
An adaptive gene-level association test for pedigree data.  
*BMC Genetics*, (Genetic Analysis Workshop (GAW) 20), 2018, 19(Supp 1):68. doi: 10.1186/s12863-018-0639-2
13. **Jun Young Park**, Chong Wu, Saonli Basu, Matt McGue, Wei Pan  
Adaptive SNP-set association testing in generalized linear mixed models with application to family studies.  
*Behavior Genetics*, 2018, 48(1):55-66. doi: 10.1007/s10519-017-9883-x

#### **Submitted/under review**

14. Katherine St.Clair, **Jun Young Park**, Brian R. Gray, Robert S. Capers. Modeling occupancy probabilities hierarchically, given misclassification and spatial dependence. *Submitted*.
15. ♦David Veitch, \*Yinqiu He, \***Jun Young Park**. Rank-adaptive covariance changepoint detection for estimating dynamic functional connectivity from fMRI data. *Submitted*. Arxiv: 10.48550/arXiv.2309.10284  
# This manuscript won a distinguished student paper award for ENAR 2024.

#### **In preparation**

16. Extending inverse probability of censoring weighting for improved risk prediction.
17. Leveraging multi-modal brain imaging for discovery of causal pathways in genome-wide association studies.
18. A general method to improve power of association between random vectors.
19. Spatial conditional correlation analysis for detecting age trajectories in intermodal coupling.

#### **Grants and Supports**

1. Title: Evaluating psilocybin assisted psychotherapy in depression using neuroimaging (EPIPHANI)  
Source: Labatt Family Innovation Fund  
Role: Co-investigator (PI: Drs. Colin Hawco, Ishrat Husain, Joshua Rosenblat)
2. Title: Fostering open science and reproducibility in neuroimaging studies by leveraging summary statistics  
Source: Connaught New Researcher Award  
Role: Principal Investigator  
Period: 2023-2025  
Award: \$20,000
3. Title: Leveraging multi-modal neuroimaging for the discovery of modality-specific genetic interactions for Alzheimer's disease  
Source: Accelerator grant, University of Toronto McLaughlin Centre  
Role: Lead Principal Investigator (Co-PI: Daniel Felsky (CAMH), Jessica Gronsbell)  
Period: 2023-2024  
Award: \$75,000
4. Title: Spatial-extent inference and prediction in brain imaging data  
Source: Discovery grant, Natural Sciences and Engineering Research Council (NSERC) of Canada  
Role: Principal Investigator

- Period: 2022-2027  
Award: \$95,000
5. Title: Spatial-extent inference and prediction in brain imaging data  
Source: Discovery launch supplement, Natural Sciences and Engineering Research Council (NSERC) of Canada  
Role: Principal Investigator  
Period: 2022-2027  
Award: \$12,500
  6. Title: Removing unwanted variations from heterogeneous neuroimaging and genomic data  
Source: Catalyst grant, Data Science Institute, University of Toronto  
Role: Nominated Principal Investigator (Co-PI: Laurent Briollais (Lunenfeld), Michael Wilson (Sickkids))  
Period: 2022-2023  
Award: \$100,000
  7. Title: Multidisciplinary doctoral program  
Source: CANSSI Ontario  
Role: Supervisor (co-supervisor: Aristotle Voineskos (CAMH))  
Period: 2022-2027  
Award: \$50,000 equivalent
  8. Title: Revisiting the income-happiness paradox: testing the rapidity of income growth as a key to happiness  
Source: SSHRC Insight Grant  
Role: Collaborator (PI: Dr. Felix Cheung (Department of Psychology, University of Toronto))  
Period: 2021-2025

## Awards & Honors

|      |  |   |
|------|--|---|
| 2023 | Connaught New Researcher Award         | The Connaught Fund                                    |
| 2023 | Resource Allocation Competition        | Digital Research Alliance of Canada                   |
| 2020 | Student Paper Award (runner-up)        | American Statistical Association (Section in Imaging) |
| 2019 | Student Paper Award (runner-up)        | American Statistical Association (Section in Imaging) |
| 2019 | Student Award                          | Statistical Methods in Imaging (SMI) conference       |
| 2019 | Biostatistics Best Student Paper Award | Division of Biostatistics, University of Minnesota    |
| 2019 | MnDRIVE PhD Informatics Fellowship     | University of Minnesota                               |
| 2014 | Outstanding Teaching Assistant Award   | Division of Biostatistics, University of Minnesota    |
| 2013 | Dean's PhD Scholar's Award             | School of Public Health, University of Minnesota      |

## Presentations

### *Talks*

- 2024 Computational and Methodological Statistics (CMStatistics) (scheduled)  
Institute for Mathematical and Statistical Innovation, University of Chicago (scheduled)  
The 7th International Conference on Econometrics and Statistics (scheduled)  
Korean Statistical Society Summer Conference (scheduled)  
Statistical Methods in Imaging (SMI) conference (scheduled)  
New England Statistics Symposium (scheduled)
- 2023 Computational and Methodological Statistics (CMStatistics)  
University of California – Santa Cruz  
Joint Statistical Meetings (JSM)  
The 6th International Conference on Econometrics and Statistics  
NeuroImaging Statistics satellite meeting to the 2023 Organization for Human Brain Mapping  
Statistical Methods in Imaging (SMI) conference  
Banff International Research Station (BIRS) workshop at Casa Matemática Oaxaca, Mexico  
Eastern North American Region (ENAR) meeting
- 2022 University of Oxford, Big Data Institute  
Computational and Methodological Statistics (CMStatistics)

|      |   |
|------|---|
|      | Joint Statistical Meetings (JSM)  |
|      | Data Science Institute, University of Toronto                                     |
|      | Eastern North American Region (ENAR) meeting                                      |
| 2021 | PennSIVE Center, University of Pennsylvania Perelman School of Medicine           |
|      | Eastern North American Region (ENAR) meeting                                      |
| 2020 | Joint Statistical Meeting (JSM) (virtual)   |
|      | Eastern North American Region (ENAR) meeting (virtual)                            |
|      | Wake Forest University School of Medicine   |
|      | Vanderbilt University Medical Center  |
|      | Columbia University   |
| 2019 | International Chinese Statistical Association (ICSA) Applied Statistics Symposium |
|      | Joint Statistical Meeting (JSM)   |
|      | Statistical Methods in Imaging (SMI)  |
|      | Eastern North American Region (ENAR) meeting                                      |
| 2018 | Eastern North American Region (ENAR) meeting                                      |
| 2012 | Northfield Undergraduate Mathematics Symposium                                    |

### ***Posters***

|      |  |
|------|--|
| 2024 | The Organization of Human Brain Mapping (OHBM) meeting (scheduled) |
| 2023 | The Organization of Human Brain Mapping (OHBM) meeting             |
| 2022 | The Organization of Human Brain Mapping (OHBM) meeting             |
|      | Statistical Methods in Imaging (SMI) conference                    |
| 2021 | Statistical Methods in Imaging (SMI) conference                    |
| 2019 | Twin Cities ASA Chapter Meeting                                    |
|      | UMN School of Public Health (SPH) Research Day                     |
| 2017 | UMN Minnesota Supercomputing Institute (MSI) Research Exhibition   |
|      | UMN School of Public Health (SPH) Research Day                     |

### **Teaching**

#### ***Course instructor (University of Toronto)***

| <i>Course number</i> | <i>Course title</i>             | <i>Semester(s)</i>                  |
|----------------------|---------------------------------|-------------------------------------|
| PSY 305              | Treatment of psychological data | Winter 2023, 2024, 2025 (scheduled) |
| STA442               | Methods of applied statistics   | Fall 2022, 2023, 2024 (scheduled)   |
| STA447/2006          | Stochastic processes            | Winter 2021, 2022                   |
| STA1008              | Applied statistics              | Fall 2020, 2021, 2022, 2023         |
| STA2101              | Methods of Applied Statistics I | Fall 2024 (scheduled)               |

#### ***Teaching assistant (University of Minnesota)***

|          |  |
|----------|--|
| Courses: | Biostatistical literacy, Biostatistics I, Exploring and visualizing data in R, Clinical trials, Statistical methods for correlated data, Linear models, Statistical learning and data mining |
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### **Services**

#### ***Service to the profession:***

|                       |  |
|-----------------------|--|
| <i>Conferences</i>    | Session organizer, JSM 2024 Topic-contributed session  |
|                       | Session organizer, SMI 2023 Invited session  |
|                       | Session organizer, JSM 2023 Topic-contributed session  |
|                       | Session organizer, ENAR 2023 Invited session   |
|                       | Session organizer, ENAR 2022 Invited session   |
|                       | Session chair, ICSA Applied Statistics Symposium 2019  |
|                       | Session chair, ENAR 2019   |
| <i>Journal review</i> | Annals of Applied Statistics, Bioinformatics, Biometrics, Biometrika, Frontiers in Neuroscience, Human Brain Mapping, Imaging Neuroscience, Journal of American Statistical Association, Journal of Machine Learning |

Research, NeuroImage, Statistics in Biosciences, Statistics in Medicine, WIREs Computational Statistics  
*Others* Reviewer of the student paper competition, ASA Statistics in Imaging section 2022, 2023, 2024

### ***Service to the university/department***

2022– Mentor, CANSSI Ontario STAGE (Strategic Training for Advanced Genetic Epidemiology) program  
 2020– Faculty member, Univ of Toronto Department of Statistical Sciences graduate committee  
 2018–2020 Student representative, Univ of Minnesota Biostatistics faculty meeting  
 2018–2019 Reviewer, Univ of Minnesota Council of Graduate Students (COGS) grants application review committee

### **Students** (University of Toronto)

#### Supervision

| <i>Name</i>    | <i>Degree program</i> | <i>Period</i>     | <i>Role</i>   |
|----------------|-----------------------|-------------------|---|
| David Veitch   | Ph.D.                 | Sept 2022-present | Co-supervisor (with Dr. Zhou Zhou)                        |
| Ruyi Pan       | Ph.D.                 | Sept 2022-present | Supervisor (with Drs. Aristotle Voineskos and Nancy Reid) |
| Rongqian Zhang | Ph.D.                 | Sept 2021-present | Supervisor  |
| Yuan Tian      | Ph.D.                 | Sept 2021-present | Supervisor (with Dr. Jessica Gronsbell)                   |
| Hainan Xu      | Master                | Sept 2023-present | RA supervisor   |
| Zhengdan Li    | Undergraduate         | May 2022-Aug 2022 | RA supervisor   |
| Linxi Chen     | Undergraduate         | May 2022-Aug 2022 | RA supervisor   |
| Xiaoli Yang    | Undergraduate         | Jan 2021-Aug 2021 | RA supervisor   |

#### Committee member

| <i>Name</i>  | <i>Degree program</i> | <i>Graduation year</i> | <i>Type</i>  |
|--------------|-----------------------|------------------------|--|
| Cathlyn Chen | Master                | 2025 (expected)        | Program Advisory Committee, Institute of Medical Science |
| Ziang Zhang  | Ph.D.                 | 2024                   | Departmental Oral Exam (DOE)                             |
| Fan Wang     | Ph.D.                 | 2022                   | Departmental Oral Exam (DOE)                             |
| Lin Zhang    | Ph.D.                 | 2021                   | Departmental Oral Exam (DOE)                             |
| Wei Q. Deng  | Ph.D.                 | 2021                   | Departmental Oral Exam (DOE)                             |

#### STAGE program

| <i>Name</i>      | <i>Degree program</i> | <i>Period</i>    | <i>Role</i>  |
|------------------|-----------------------|------------------|--|
| Yuan Tian        | Ph.D.                 | Nov 2022-present | Mentor (with Drs. Jessica Gronsbell and Daniel Felsky) |
| Tara Henechowicz | Ph.D. Neuroscience    | Nov 2022-present | Mentor (with Dr. Daniel Felsky)                        |

#### Reading course

| <i>Name</i> | <i>Degree program</i> | <i>Period</i> |
|-------------|-----------------------|---------------|
| Haonan Gao  | Undergraduate         | Summer 2023   |
| Joanna Lo   | Undergraduate         | 2020-2021     |

### **Miscellaneous**

Citizenship Republic of Korea (South Korea)  
 Languages English, Korean  
 Membership American Statistical Association (ASA), Statistical Society of Canada (SSC), Organization of Human Brain Mapping (OHBM)