Julia Wrobel

13001 East 17th Place, Aurora, Colorado 80045, USA
julia.wrobel@cuanschutz.edu • github: julia-wrobel • website: juliawrobel.com
CV compiled on 2021-07-24

ACADEMIC APPOINTMENTS

Department of Biostatistics & Informatics Colorado School of Public Health
Assistant Professor (Tenure Track) — Aug 2019 – Present

EDUCATION

Columbia University Mailman School of Public Health, New York, NY, USA
PhD in Biostatistics — Sep 2015 – Jun 2019
- Dissertation title: Functional data analytics for wearable device and neuroscience data
- Advisor: Jeff Goldsmith

Master of Science (M.S.) in Biostatistics — Sep 2013 – May 2015
- Practicum: Associations and Patterns in Ambulatory Blood Pressure
- Advisor: Jeff Goldsmith

Swarthmore College, Swarthmore, Pennsylvania, USA
Bachelor of Arts (B.A.) in Chemistry — Sep 2006 – May 2010

HONORS & AWARDS

ASA Biometrics Section JSM Travel Award — Jul 2018

ENAR Distinguished Student Paper Award — Mar 2018

NESS IBM Student Research Award Finalist — Mar 2018

WSDS 2017 Conference Travel Award — Oct 2017
Women in Statistics and Data Science conference in La Jolla, California

Gertrude M. Cox Scholarship for Women in Statistics — Jul 2017

Summer Institute in Statistics for Big Data Travel Scholarship — Jul 2017
University of Washington Department of Biostatistics

Certificate of Distinction, Columbia Department of Biostatistics — May 2015
For outstanding research by a Master's student

Sigma Xi Scientific Research Society — May 2010

PRIOR WORK EXPERIENCE

Department of Biostatistics, Columbia University
Research Assistant — Jun 2014 – Present
- Supervisor: Jeff Goldsmith
- Research areas: Functional data, neuroimaging, variational inference, accelerometers, interactive graphics

Department of Biostatistics, Columbia University
Research Assistant — Feb 2016 – Oct 2017
- Supervisor: Sara Lopez-Pintado
- Research areas: Multivariate band depth for functional data, imaging statistics, nonparametric hypothesis tests

Data Science and AI Research, AT&T Labs
Summer Intern - Statistical Research Group — May 2018 – Aug 2018
- Supervisor: Senior Inventive Scientist Emily Dodwell
- Curve clustering and predictive modeling for addressable advertising delivery data

Statistical Analysis Center for Clinical Trials, Columbia University
Data Analyst & SAS Programmer — May 2014 – Aug 2015

Department of Immunology and Rheumatology, Children's Hospital of Philadelphia
Immunology Research Scientist — Apr 2011 – Jul 2013

PROFESSIONAL ORGANIZATIONS & SERVICE

EDITORIAL EXPERIENCE

Referee: Annals of Applied Statistics, Applied Mathematical Modeling, Biometrics, Biostatistics, Canadian Journal of Statistics, Computational Statistics and Data Science, f1000Research, Electronic Journal of Statistics, Journal of the American Statistical Association, Journal of Computational and Graphical Statistics, Stat, Statistics and Computing, Statistics in Medicine, Statistical Methods in Medical Research, PLOS ONE

MEMBERSHIPS

ASA, ENAR, WNAR

DEPARTMENTAL AND UNIVERSITY COMMITTEES

Director, Health analytics and data science certificate program	Sep 2019 – Present
Organizer, Biostatistics MS/PhD program student visit day	Mar 2020 – Present
Member, MS qualifying exam committee	Apr 2021 – Present
Member, PhD qualifying exam committee	Apr 2020 – Apr 2021
Member, Inference curriculum task force	Sep 2019 – Dec 2019

NATIONAL AND INTERNATIONAL SERVICE

Social Media co-Chair, ENAR Council for Emerging and New Statisticians	Jul 2021 – Present
Member, ENAR Council for Emerging and New Statisticians	Apr 2020 – Present
Reviewer, ASA Statistics in Imaging student paper competition	Dec 2020 – Present
Member, CMStatistics Functional Data Analysis specialized team	Feb 2020 – Present

PUBLICATIONS

PEER REVIEWED ARTICLES

bold text indicates graduate student under my supervision

- EI McDonnell, V Zipunnikov, J Schrack, J Goldsmith, and J Wrobel, "Registration of 24-hour accelerometric rest-activity profiles and its application to human chronotypes", *Biological Rhythm Research*, May 2021.
- A Bauer and J Wrobel, "registr 2.0: Incomplete Curve Registration for Exponential Family Functional Data", *Journal of Open Source Software*, vol. 6, no. 61, pp. 2964, May 2021.
- AM Johnson, JM Boland, J Wrobel, EK Klezcko, MW Evans, K Hopp, L Heasley, ET Clambey, K Jordan, RA Nemenoff, and EL Schenk, "Cancer cell-specific MHCII expression as a determinant of the immune infiltrate organization and function in the non-small cell lung cancer tumor microenvironment", *Journal of Thoracic Oncology*, May 2021.
- J Wrobel, J Muschelli, and A Leroux, "Diurnal Physical Activity Patterns across Ages in a Large UK Based Cohort: The UK Biobank Study", *Sensors*, vol. 21, no. 4, pp. 1545, Jan 2021.
- J Wrobel, ML Martin, R Bakshi, PA Calabresi, M Elliot, D Roalf, RC Gur, RE Gur, RG Henry, G Nair, J Oh, N Papinutto, D Pelletier, DS Reich, WD Rooney, TD Satterthwaite, W Stern, K Prabhakaran, NL Sicotte, RT Shinohara, and J Goldsmith, "Intensity warping for multisite MRI harmonization", *Neuroimage*, vol. 223, pp. 117242, Dec 2020.
- MI Becker, DJ Calame, J Wrobel, and AL Person. "Online control of reach accuracy in mice", *Journal of Neurophysiology*, Nov 2020.
- J Wrobel, V Zipunnikov, J Schrack, and J Goldsmith, "Registration for exponential family functional data", *Biometrics*, vol. 75, no. 1, pp. 48–57, Mar 2019.
- J Wrobel, "registr: Registration for exponential family functional data", *Journal of Open Source Software*, vol. 3, no. 22, pp. 557 Feb 2018.
- S Lopez–Pintado and J Wrobel, "Robust non-parametric tests for imaging data based on data depth", *Stat*, vol. 6, no. 1, pp. 405–419, Oct 2017.
- J Wrobel, SY Park, AM Staicu, J Goldsmith, "Interactive graphics for functional data analyses", *Stat*, vol. 5, no. 1, pp. 108–118, Feb 2016 **Selected as an exemplar paper of Stat**, showcased at the 2017 Joint Statistical Meetings.
- JH Kim, J Santaella-Tenorio, C. Mauro, J Wrobel, M Cerdâ, KM Keyes, D Hasin, SS Martins, and G Li. "State medical marijuana laws and the prevalence of opioids detected among fatally injured drivers?", *American Journal of Public Health*, vol. 106, no. 11, pp. 2032–2037, Aug 2016.

- S Canna, J Wrobel, N Chu, PA Kreiger, M Paessler, EM Behrens, "Interferon-γ mediates anemia but is dispensable for fulminant toll-like recepter 9–induced macrophage activation syndrome and hemophagocytosis," *Arthritis and Rheumatism*, vol. 65 (7), pp. 1764–1775, Jul 2013.

CURRENTLY UNDER REVIEW

- SC Rushing, A Kelley, S Bull, D Stephens, J Wrobel, J Silvasstar, R Peterson, C Begay, TG Dog, C McCray, DL Brown, M Thomas, C Caughlan, M Singer, P Smith, and K Sumbundu*. "Efficacy and Impact of an mHealth Intervention to promote Mental Wellness for American Indian and Alaska Native Teens and Young Adults: A Randomized Controlled Trial of the BRAVE Study", Under Review.
- A Brooks-Russell, T Brown, K Friedman, J Schwartz, KA Ryall, E Amioka, G Dooley, GS Wang, J Wrobel, **B Steinhart**, G Milavetz and MJ Kosnett, "Simulated Driving Performance among Daily and Occasional Cannabis Users", vol. 0, no. 0, pp. 0–0, Jan 2022.
- **B Steinhart**, KR Jordan, J Bapat, MD Post, LJ Brubaker, BG Bitler, and J Wrobel, "B Cell (CD19+) and Macrophage (CD68+) Spatial Interaction in the Tumor Microenvironment Associated with Higher Survival Probability", vol. 0, no. 0, pp. 0–0, Jan 2022.
- CR Harris, ET McKinley, JT Roland, Q Liu, MJ Shrubsole, K Lau, RJ Coffey, J Wrobel, and S Vandekar "Quantifying and correcting slide-to-slide variation in multiplexed immunofluorescence images", vol. 0, no. 0, pp. 0–0, Jan 2022.
- S Seal, J Wrobel, AM Johnson, RA Nemenoff, EL Schenk, BG Bitler, KR Jordan, and D Ghosh, "On Clustering for Cell Phenotyping in Multiplex Immunohistochemistry (mIHC) and Multiplexed Ion Beam Imaging (MIBI) Data", vol. 0, no. 0, pp. 0–0, Jan 2022.
- J Wrobel, J Silvasstar, R Peterson, K Sumbundu, A Kelley, D Stephens, SC Rushing, and S Bull, "Patterns of User Engagement in the BRAVE Study", vol. 0, no. 0, pp. 0–0, Jan 2022.

SOFTWARE

- J Goldsmith, F Scheipl, L Huang, J Wrobel, J Gellar, J Harezlak, M McLean, B Swihart, L Xiao, C Crainiceanu, and P Reiss, "refund: Regression with Functional Data," *R package available on CRAN*, version 0.1-17, May 2018. Over 3000 downloads per month.
  - author: "mfpca.sc(): multilevel FPCA by smoothed covariance"
  - contributor: version 0.1-15 to present
  - maintainer: version 0.1-16 to present
- J Wrobel, EI McDonnell, A Bauer, and J Goldsmith, "registr: Registration for exponential family functional data," *R package available on CRAN and GitHub* Nov 2017.
- J Wrobel and J Goldsmith, "refund.shiny: interactive graphics for functional data analysis," *R package available on CRAN* Sep 2015. Downloaded over 17,000 times as of 12/02/2020.
- J Wrobel and S Lopez–Pintado, "depthTests: Nonparametric hypothesis tests based on multivariate band depth," *R package available on GitHub* Sep 2017.

PRESENTATIONS

INVITED TALKS

- J Wrobel, "Registration for wearable device data with application to circadian rhythm chronotype discovery," *Department of Biostatistics, Vanderbilt University*, Jun 2021.
- J Wrobel, "Intensity warping for multisite MRI harmonization," *2021 Statistical Methods in Imaging*, Virtual Conference, May 2021.
- J Wrobel, "Online control of reach accuracy and functional data models for dynamic movement," *2020 CMStatistics*, Virtual Conference, Dec 2020.
- J Wrobel, "Registration for wearable device data with application to circadian rhythm chronotype discovery," *Department of Biostatistics, Johns Hopkins University*, Virtual Seminar, Sep 2020.
- J Wrobel, "Registration for wearable device data with application to circadian rhythm chronotype discovery," *Department of Epidemiology and Biostatistics, University of California San Francisco*, Virtual Seminar, Aug 2020.
- J Wrobel, "Physical activity patterns across ages in the NHANES data," *2020 JSM*, Philadelpha, PA, USA, Aug 2020.
- J Wrobel, B Bitler, C Rickert, and K Jordan, "Multiplexed Ion Beam Imaging (MIBI) analysis of the ovarian tumor microenvironment," *Department of Immunology and Microbiology, CU Anschutz School of Medicine*, Virtual Seminar, Jul 2020.
- J Wrobel, "Modeling kinematic behavior using functional linear first-order differential equations," *2020 ENAR*, Nashville, TN, USA, Mar 2020.
- J Wrobel, "Circadian rhythms revealed by accelerometers," *Use of Wearable and Implantable Devices in Health Research*, Banff International Research Station, Alberta, Canada, Feb 2020.
- J Wrobel, "Intensity warping for multisite MRI harmonization," *2019 CMStatistics*, London, UK, Dec 2019.
- J Wrobel, "Identifying circadian chronotypes using accelerometers," *2018 CMStatistics*, Pisa, Italy, Dec 2018.
- J Wrobel, "Modeling the effects of high-dimensional covariates on 3D kinematics," *2018 PEPS Workshop on advances in functional data analysis*, Rennes, Brittany, France, Oct 2018.
- J Wrobel, "Registration for exponential family functional data," *2018 JSM*, Vancouver, Canada, Aug 2018.
- J Wrobel, "Clustering and Modeling Addressable Advertising Impression Curves," *AT&T Labs Intern Research Showcase*, New York, NY, USA, Jul 2018.
- J Wrobel, "Introduction to Shiny using NBA Data," *RLadies NYC, hosted at NBA NYC*, New York, NY, USA, May 2018.
- J Wrobel, "Registration for exponential family functional data," *2017 CMStatistics*, London, UK, Dec 2017.
- J Wrobel, "Identifying patterns in physical activity," *2017 AT&T Labs Graduate Student Symposium*, New York, NY, USA, Dec 2017.
- J Wrobel, "Registration for binary functional data," *2017 ICSA Applied Statistics Symposium*, Chicago, IL, USA, Jun 2017.

CONTRIBUTED TALKS

- J Wrobel, "Registration for exponential family functional data," *2017 Joint Statistical Meetings*, Baltimore, MD, USA, Jul 2017.
- J Wrobel, "Interactive graphics for functional data analyses," *2016 Joint Statistical Meetings*, Chicago, IL, USA, Aug 2016.

POSTERS

- J Wrobel, "Can early intervention save money in addressable advertising?," *2018 AT&T Labs Intern Poster Session*, Bedminster, NJ, USA, Jul 2018.
- J Wrobel, "Removing scanner variability from structural MRIs," *2018 Statistical Methods in Imaging (SMI) Conference*, Philadelphia, PA, USA, Jun 2018.
- J Wrobel, "Communicating results of functional data analyses with interactive graphics," *2017 Women in Statistics and Data Science (WSDS) Conference*, La Jolla, California, USA, Oct 2017.
- J Wrobel, "Can we use statistics to compare pictures? An application to brain imaging data," *2016 Women in Science at Columbia (WISC) Symposium*, New York, NY, USA, Apr 2016.
- J Wrobel, "Associations and Patterns in Ambulatory Blood Pressure," *Columbia University Department of Biostatistics 75th Anniversary Gala*, New York, NY, USA, Apr 2015.

LEADERSHIP

Biostatistics Graduate Student Research Working Group, Columbia University
Founder and Organizer — Dec 2015 – Jun 2019
- Monthly student seminar series to facilitate research collaborations and hone presentation skills

Columbia Biostatistics Computing Club, Columbia University
Founder and Co-Organizer — Dec 2016 – Jun 2018
- Lead tutorials on computational methods often encountered in biostatistics research
- Built CBCC website using GitHub pages

Biostatistics Student Cohort, Columbia University
Doctoral Student Leader — Aug 2015 – Jun 2019

TEACHING

Full Courses

Biostatistical Methods II, CU Anschutz Department of Biostatistics & Informatics — Spring 2021

Guest Lectures

- "Introduction to web scraping", R for Data Science course taught by Dr. Debashis Ghosh, Colorado School of Public Health, November 2019
- "Introduction to web APIs", R for Data Science course taught by Dr. Debashis Ghosh, Colorado School of Public Health, November 2019
- Nonparameteric hypothesis testing, Biostatistics Methods I course taught by Dr. Alex Kaizer, Colorado School of Public Health, October 2019
- Gibbs sampling and the Metropolis-Hasting algorithm, Advanced Data Analysis course taught by Dr. Nichole Carlson, Colorado School of Public Health, September 2019
- "Introduction to Bayesian regression", Longitudinal Data Analysis course taught by Dr. Elizabeth Sweeney, Columbia University Mailman School of Public Health, November 2018
- "Building Shiny apps with flexdashboard", Data Science I course taught by Dr. Jeff Goldsmith, Columbia University Mailman School of Public Health, October 2017

Teaching Assistantships

Longitudinal Data Analysis, Columbia University Department of Biostatistics (Lead TA) Fall 2018

Statistical Inference, Columbia University Department of Biostatistics (Lead TA) Spring 2018

Data Science I, Columbia University Department of Biostatistics (Lead TA) Fall 2017

Categorical Data Analysis, Columbia University Department of Biostatistics (Lead TA) Spring 2017

Categorical Data Analysis, Columbia University Department of Biostatistics Fall 2016

Statistical Inference, Columbia University Department of Biostatistics Spring 2016

Randomized Clinical Trials II, Columbia University Department of Biostatistics Fall 2015

Organic Chemistry I, Swarthmore College Department of Chemistry Sep 2008 – May 2010

ADVISING

Master's Thesis Advising

- Shelby Smith (MS in Biostatistics) 2021-2022
- Savannah Mierau (MS in Biostatistics) 2021-2022
- Benjamin Steinhart (MS in Biostatistics) 2020-2022
- Samantha Bothwell (MS in Biostatistics), 2019-2021

Doctoral Examination and Defense Committees

- Yanran Wang, Department of Biostatistics and Informatics, Expected graduation 2022
- Alex Jensen, Department of Biostatistics and Informatics, Expected graduation 2021
- Connor McCullough, Department of Bioengineering, Expected graduation 2021

GRANT SUPPORT

PRESENT SUPPORT

Network Analysis of the Ovarian Tumor Microenvironment — Apr 2020 – Mar 2021
- CCTSI Translational Methods Biostatistics/Bioinformatics Pilot Grant
- Role: PI

Multiplexed single-cell imaging in pediatric lupus nephritis — Oct 2020 – Sep 2023
- Lupus Research Alliance Lupus Innovation Award (PI: Hsieh)
- Role: Co-Investigator