

Cody Carroll

Curriculum Vitae

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[codycarroll.github.io](https://github.com/codycarroll)

Education

- 2021 **PhD in Statistics**, *University of California, Davis*.
Dissertation Title: Intercomponent Time Dynamics for Multivariate Functional Data
Advisor: Hans-Georg Müller
- 2017 **MS in Statistics**, *University of California, Davis*.
- 2014 **BS in Mathematics**, *University of Texas at Austin*.

Research Interests

Functional and longitudinal data analysis— time dynamics of multivariate functional data; constrained functional data analysis; imputation; analysis of random objects

Applications— longitudinal studies; growth and development; aging and longevity

Academic Appointments

- 2022 - **Assistant Professor**, *Department of Mathematics and Statistics / Master's in Data Science Program (joint appointment). University of San Francisco*.
- 2022 **Lecturer**, *Department of Statistics, University of California, Davis*.

Professional Experience

- 2021 - 2022 **Quantitative Analytics Fellow**, *Wells Fargo*, Charlotte, NC.
- Automate processes in Python for documenting credit decisioning ML models
 - Present automation workflow and resulting model development documents to fellow quants and management in the Risk Modeling Group

Teaching

Instructor of Record

- Fall 2022 **Machine Learning Laboratory**.
University of San Francisco, Data Institute
- Fall 2022 **Communications for Analytics**.
University of San Francisco, Data Institute
- Spring 2022 **Applied Statistics for Business and Economics**.
UC Davis, Dept. of Statistics/Dept. of Economics
- Summer 2019 **Brief Course in Mathematical Statistics II**.
UC Davis, Dept. of Statistics
- Spring 2019 **Applied Statistics for Biological Sciences**.
UC Davis, Dept. of Statistics
- Summer 2018 **Applied Statistics for Business and Economics**.
UC Davis, Dept. of Statistics/Dept. of Economics

Teaching Assistant

- *Applied Statistics for Biological Sciences* (Su17) UCD, Statistics
- *Applied Statistics for Business and Economics* (F19) UCD, Statistics/Economics
- *Applied Statistical Methods Regression Analysis* (F17) UCD, Statistics
- *Introduction to Probability Theory* (S18) UCD, Statistics
- *Mathematical Statistics* (W21) UCD, Statistics
- *Survival Analysis* (F18) UCD, Statistics/Biostatistics, *Grad. Level*
- *Statistical Consulting* (W18, W19, W20) UCD, Statistics/Biostatistics, *Grad. Level*

International Teaching

2014-2015 **ESL Teacher**, *Nishinomiya Imazu Senior High School*, Nishinomiya, Japan.

Publications and Preprints

* indicates co-first authorship

Theory and Methodology

- 2020 *Cross-component Registration for Multivariate Functional Data, with Application to Growth Curves*
C. Carroll, H.-G. Müller, and A. Kneip, *Biometrics* 2020.
- 2021 *Learning Delay Dynamics for Multivariate Stochastic Processes, With Application to Predicting COVID-19 Case Trajectories in the United States*,
P. Dubey, Y. Chen, A. Gajardo, S. Bhattacharjee, **C. Carroll**, H. Chen, Y. Zhou, and H.-G. Müller. *Journal of Mathematical Analysis and Applications*, 2021.
- 2021+ *Latent Transport Models for Multivariate Functional Data*
C. Carroll and H.-G. Müller. *Submitted to Biometrics*.

Interdisciplinary Applications

- 2020 *Time-Dynamics of COVID-19*
C. Carroll, S. Bhattacharjee, Y. Chen, P. Dubey, J. Fan, A. Gajardo, X. Zhou, H.-G. Müller, J.-L. Wang, *Scientific Reports* 2020.
- 2020 *Mountaineers on Mount Everest: effects of age, sex, experience, and crowding on rates of success and death*
R. B. Huey*, **C. Carroll***, R. Salisbury, J.-L. Wang, *PLoS One* 2020.
◦ received media coverage from *The Economist*, *Reuters*, & *The London Times*
- 2021 *A Practical Method to Quantify Knowledge-Based Dose Volume Histogram Prediction Accuracy and Uncertainty with Reference Cohorts*
B. Covele, **C. Carroll**, K. Moore, *Journal of Applied Clinical Medical Physics*, 2021.
- 2022 *Comparison of Diagnostic Predictors of Neonatal Survivability in Non-Domestic Caprinae*
T. N. Bliss, M. J. Marinkovich, R. E. Burns, **C. Carroll**, M. M. Clancy, and L. L. Howard. *Journal of Zoo and Wildlife Medicine*, 2022.

Software

Contributor/ *fdapace: Functional Data Analysis and Empirical Dynamics. R package.*
Former **C. Carroll**, A. Gajardo, Y. Chen, X. Dai, J. Fan, P. Z. Hadjipantelis, K. Han, et al.
Maintainer <https://CRAN.R-project.org/package=fdapace>.

Presentations

Invited Talks

- 2022 **Department of Mathematics and Computer Science, Cal Poly Humboldt.**
Mixed-Effect Warping Models for Multivariate Human Growth Curves
- 2022 **Department of Mathematics and Computer Science, Cal Poly Humboldt.**
Case Study in Data Science Pedagogy: k-Nearest Neighbors Regression
- 2022 **Halicioğlu Data Science Institute, UC San Diego.**
Latent Transport Models for Multivariate Functional Data
- 2022 **Halicioğlu Data Science Institute, UC San Diego.**
Case Study in Data Science Pedagogy: k-Nearest Neighbors Regression
- 2022 **Department of Mathematics and Statistics, San Diego State University.**
Intercomponent Time Dynamics for Multivariate Functional Data
- 2022 **Department of Mathematics and Statistics, University of San Francisco.**
Nonparametric Regression on Mt. Everest
- 2022 **Data Science Institute, University of San Francisco.**
Intercomponent Time Dynamics for Multivariate Functional Data
- 2022 **Department of Probability and Applied Statistics, UC Santa Barbara.**
Teaching Statistics *Here and Now*
- 2022 **Department of Statistics, UC Berkeley.**
Case Study in Data Science Pedagogy: Linear Association and Correlation
- 2021 **Department of Applied Statistics, Lawrence Livermore National Lab.**
Latent Transport Models for Multivariate Functional Data
- 2020 **ECHO Lab, Bill and Melinda Gates Foundation.**
Longitudinal Data Analysis with *fdapace*
- 2020 **Department of Statistics, UC Davis.**
Shift-Warping for Multivariate Functional Data
- 2019 **NSF RTG Statistics Workshop Series, UC Davis.**
Deception and Coin Flips: Statistical Intuition through Lies and Games
- 2018 **NSF RTG Symposium: Modern Tools for Statistics, UC Davis.**
A Practical Introduction to Functional Data Analysis
- 2018 **Department of Statistics, UC Davis.**
Time Warping for Human Growth Curves

Posters

- 2020 **Benchmarking Dose-Volume Histogram Prediction Accuracy Between Different Knowledge-Based Models**, Vancouver, BC, Canada, *Joint AAPM/COMP Meeting*

Mentoring Experience

- 2017-2020 **NSF Research Training Group, Dept. of Statistics, UC Davis.**
Advising Undergraduate Research
 - *Warping methods for wearable device data*, with Hainiu Xu
 - *Functional regression for wearable device data*, with Phoebe Biying Li
 - *Functional clustering for wearable device data*, with Weiyi Chen
 - *Geographic trends for functional housing price data*, with Yunbai Zhang
 - *Functional data analysis of global temperature extrema*, with Cynthia Lai

- 2020 **Mentor for Undergraduate Honors Thesis.**
Warping methods for wearable device data, by Hainiu Xu

Awards and Fellowships

- 2021 **Peter Hall Graduate Research Award.**
Awarded once yearly to a graduating PhD student for excellence in statistical research during degree,
Dept. of Statistics, UC Davis
- 2021 **Alan Fenech Service Award.**
Dept. of Statistics, UC Davis
- 2020 **Outstanding Graduate Teaching Award.**
Awarded to 10 graduate students university-wide, *Grad. Studies, UC Davis*
- 2020 **Excellence in Teaching Award.**
Awarded to one student instructor in the department on special occasion, *Dept. of Statistics, UC Davis*
- 2015-2020 **NSF Research Training Grant Recipient.**
- 2016-2019 **Summer Statistics Research Fellowship Award.**
Dept. of Statistics, UC Davis
- 2017-2019 **TA Recognition Award.**
Dept. of Statistics, UC Davis
- 2015-2018 **UC Davis Graduate Scholars Fellowship.**
Grad. Studies, UC Davis

Technical skills

Advanced R, Python, git, \LaTeX
Intermediate SQL, Julia, Travis-CI

Professional Service

Editorial Review

- Annals of Statistics
- Journal of the American Statistical Association
- Biometrika
- Computational Statistics and Data Analysis
- Computer Methods and Programs in Biomedicine

UC Davis

- Graduate Student Representative, Dept. of Statistics
- Coordinator, Guerilla Queer Bar, Davis