



# SEAN P. KENT

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## FIND ME

[github.com/skent259](https://github.com/skent259)  
[pages.stat.wisc.edu/~kent](https://pages.stat.wisc.edu/~kent)  
[linkedin.com/in/seanpkent/](https://linkedin.com/in/seanpkent/)

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## RESEARCH INTERESTS

- Multiple instance learning (MIL), weakly supervised learning
- Ordinal regression in MIL
- Applications of MIL to breast cancer, tissue micro-array data

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## TECHNICAL SKILLS

- R (package dev.)
- R Shiny dashboards
- Python
- SQL
- Visualization: ggplot2, Plotly, Tableau, Plotnine
- HTML/CSS
- Git
- Linux
- MATLAB
- Google Cloud Platform
- Bash scripting
- High-throughput computing

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## EDUCATION

University of Wisconsin – Madison 2017 – (exp. 2022)  
*Ph.D. candidate in Statistics*  
*M.S. in Statistics, 2020*

- GPA: 3.97
- Thesis research in Multiple Instance Learning and Ordinal Regression
- Coursework in Machine Learning, Optimization, Causal Inference, Data Visualization, Experimental Design, and Clinical Trials

University of Notre Dame 2013 – 2017  
*B.S. SUMMA CUM LAUDE in Honors Mathematics*

- Academic interests: Actuarial Science, Machine Learning, Econometrics
- Senior Thesis: *Interest Rates: Models and Applications*

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## RESEARCH PUBLICATIONS

**Kent S, Yu M (2021+)**. Ordinal Multiple Instance Support Vector Machines, submitted.

**Kent S, Yu M, Liu Y (2021+)**. Multiple Instance Learning from Distributional Instances, submitted.

Fiore M, Smith S, Adsit R, Bolt D, Conner K, Bernstein S, **et al.** (2021+). The First 15 Months of the COVID Pandemic: Changes in Mortality, Intubation and ICU Rates, and Number of In-Patient Days Amongst 139,952 COVID Patients Hospitalized at 21 United States Health Systems, submitted.

Grady K, Cameron S, **Kent S**, Barnes Heller H, Barry M (2021). Effect of an intervention to increase exercise on sleep and seizure frequency in dogs with idiopathic epilepsy receiving anti-epileptics, accepted in *Journal of Small Animal Practice*.

Barry M, Cameron S, **Kent S**, Barnes Heller H, Grady K (2020). Daytime and nocturnal activity in treated dogs with idiopathic epilepsy compared to matched unaffected controls, *Journal of Veterinary Internal Medicine*.

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## EXPERIENCE

Health Innovations Program, UW – Madison Jul. 2019 – Present  
*Statistical collaborator*

- Build a recommendation system for when to disenroll patients of RN coordinated care through a dynamic treatment regime model in R.

School of Veterinary Medicine, UW – Madison May 2020 – Present  
*Statistical collaborator*

- Investigate how a dog's activity causes changes to seizure rates or sleep quality by leading a statistical analysis on 62 dogs with epilepsy, including Poisson and linear mixed-effect modeling in R.

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## CODE PROJECTS

- `mildsvm`, R package for multiple instance learning
- `rsmatch`, R package for longitudinal causal matching
- `crapssim`, Python package for simulating casino craps

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## STATISTICAL EXPERTISE

- Multiple-instance learning, weakly-supervised learning
- Support vector machines
- Kernel methods
- Dynamic treatment regimes
- Longitudinal matching for causal inference
- Ordinal regression
- Consulting

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## ASK ME MORE ABOUT

- Owning a small pizzeria with 8 employees at Notre Dame
- Freelance writing on craps, blackjack, slots, and other casino games
- Creating more effective data visualizations

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## EXPERIENCE (CONT.)

Pfizer, Early Clinical Development Summer 2021  
*Biostatistics intern | Remote (Pearl River, NY)*

- Resolved an unsettled FDA question and improved statistical power by researching top goodness-of-fit measures in probit regression for vaccine in-vivo potency assay.
- Saved ~30 hours of statistician time per quarter by developing an interactive app, in R Shiny, to verify the lab data's accuracy.
- Automated an assay robustness analysis—including figures, tables, and data diagnostics—by building an interactive app, in R Shiny.

AFI Data Science Institute, UW – Madison Mar. 2020 – Dec. 2020  
*Statistical collaborator*

- Improved the understanding of where COVID-19 would spread and enhanced the considerations for how colleges could reopen by developing 3 interactive, web-hosted dashboards in R shiny and Plotly, viewed 1000's of times by WI DHS, WI health systems, and other researchers.
- Awarded a COVID-19 Accelerator Challenge Grant of \$10,000 by WARF.

Equifax for Business (previously PayNet, Inc.) 2015 – 2018  
*Statistical modeling intern | Summer 2018*

- Modeled the compensation of small-business owners by estimating lognormal distribution parameters from geographical information and PayNet business factors using R and SQL.

*Statistical modeling intern | Summer 2017*

- Investigated the long-term performance of a probability-of-default model across 4 key metrics and 100's of category combinations by developing a nearly-automated procedure in R and SQL.
- Demonstrated an order-of-magnitude speed up to the model-training process—while maintaining in-production accuracy—by implementing neural networks and boosting algorithms in Python.

*Analytics intern | Summer 2015*

- Helped predict the probability-of-default for any US country and industry combination by developing a Bayesian hierarchical model in R.
- Discover insights by querying over 23 million small-business loans in SQL.

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## TALKS

**Informatics Training Conference 2021, Plenary Session**, *National Library of Medicine*, “Multiple instance learning: methodology for distributional instances, and applications to breast cancer diagnosis”

**Statistics Student Seminar 2021**, *UW – Madison*, “Multiple instance learning: an overview for statisticians, methodology for distributional instances, and applications to breast cancer diagnosis”

**Consortium for Data Scientists in Training 2020**, *Michigan Institute for Data Science*, “Multiple instance learning from distributional instances”

**Guest Lecture for Applied Epidemiology Fall 2020**, *UW – Madison graduate course*, “My journey through data visualization and why it is essential to good data science”

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## HONORS AND AWARDS

**2nd place** out of over 81 groups in a student research competition during the IEEE Intl. Conference on Digital Health, 2021

**Top score and letter of outstanding performance** out of 13 students in the Dept. of Statistics' master's exam in consulting, spring 2020

**Honorable mention** for a spatial-temporal visualization of COVID-19 growth, John Hunter Excellence in Plotting Contest at SciPy 2020

**Pre-doctoral trainee** in the NIH Funded (T32) Bio-Data Science Training Program, 2020 – present

**Invited Research Presentation**, Data Science Consortium at University of Michigan, 2020

**Outstanding TA Award**, UW – Madison Dept. of Statistics, 2018

**Phi Beta Kappa Honor Society** for liberal arts and sciences, 2017

**Glynn Family Honors Program**, 100 students per year take gen. ed. courses that emphasize discussion and writing from top professors, 2013 – 2017

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## TEACHING EXPERIENCE

Department of Statistics, UW – Madison

*Lecturer student assistant | Fall 2018*

- Taught an introductory, applied statistics course, STAT 371, to 135 students in the life sciences.
- Earned a rating on ratemyprofessor.com of 4.7/5.0.

*Teaching assistant | Aug. 2017 – Jul. 2019*

- Lead discussion sections for introductory statistics courses with various audiences across 4 semesters, including:
  - STAT 324: *Introductory Statistics for Engineers*,
  - STAT 371: *Introductory Applied Statistics for the Life Sciences*,
  - STAT 333: *Applied Regression Analysis*, and
  - STAT 679: *Special Topics in Statistics*.
- Earned ratings as high as 4.80/5.00 based on student reviews.

Department of Mathematics, Notre Dame

*Teaching assistant | Spring 2017*

- Helped teach *Mathematical Methods in Financial Economics*, an advanced course with 38 juniors, seniors, and graduate students, by revising lecture notes, grading homework and projects, and holding office hours.

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## LEADERSHIP AND SERVICE

Statistics Graduate Student Association                      Dec. 2017 – Jan. 2020

*Founding Treasurer | UW – Madison*

- Co-founded the organization, building a community of over 108 statistics graduate students, raising a budget of over \$1,000 per year, and supporting 23 student seminars, happy hours, and outreach activities.