Wilson (Weixin) Cai

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Research Interests

Causal inference, Statistical learning, Targeted minimum loss-based estimation (TMLE)

Education

2015–present **University of California, Berkeley**.
M.A. in Biostatistics
– Advisors: Mark J. van der Laan, Alan E. Hubbard and Lexin Li
– GPA: 3.95/4.00

2013–2014 **University of California, Davis**.
Exchange Student, Statistics
– Advisors: Prabir Burman and Alexander Aue
– GPA: 3.95/4.00

2011–2015 **The University of Hong Kong**.
B.Sc. in Statistics (Magna Cum Laude)
Rank No.1 in all students of the same year
– Advisor: Philip L.H. Yu and Wai Keung Li
– Major GPA: 3.90/4.00

Research Experience

2016–present **Research Assistant in Targeted Learning**, *University of California, Berkeley*.
Advisors: **Prof. Mark J. van der Laan, Prof. Alan E. Hubbard**
- Improve the TMLE performance on high- or infinite-dimensional target parameters by constructing one-step targeting procedure.
- Develop data adaptive test statistic for high dimensional multiple testing. Collaboration with Martyn Smith Group to perform differential expression analysis of micro-RNA under benzene exposure.

2015–present **Research Assistant in Statistical Imaging**, *University of California, Berkeley*.
Advisor: **Prof. Lexin Li**
- Symmetric tensor regression model enables association analysis using entire connectivity/gene-association matrix as covariate.

2013–2015 **Research Assistant in Semiparametric Time Series**, *University of California, Davis*.
Advisors: **Prof. Prabir Burman, Prof. Alexander Aue, Prof. Debashis Paul**
- Proposed a semiparametric time series model to capture the trend, seasonality and heteroscedasticity for nonstationary time series.
- Established asymptotic properties of the estimators and implemented in *R*.

2014–2015 **Research Assistant in Nonlinear Time Series**, *University of Hong Kong*.
Advisors: **Prof. Philip L.H. Yu, Prof. Wai Keung Li**
- Develop multivariate buffered autoregression (V-BAR) models with implementation into co-intergrated economic systems.
- Funded as the most prestigious undergraduate research university-wide, only receiver in Statistics.

Publications

[1] **Cai, Weixin** and van der Laan, Mark J., "One-step targeted maximum likelihood estimator for survival curve", *To appear in Targeted Learning in Data Science: Causal Inference for Complex Longitudinal Studies. Springer*, 2016.

[2] ——, "One-step targeted maximum likelihood for time-to-event outcomes", *In preparation*, 2016.

[3] **Cai, Weixin** and Hubbard, Alan E., "Data-adaptive statistics for multiple hypothesis testing in high-dimensional settings", *In preparation*, 2016.

[4] Li, Lexin, **Cai, Weixin**, Zhou, Hua, Arnemann, Katelyn, and Jagust, William, "Sparse symmetric tensor regression for association modeling of brain functional connectivity", *Submitted to NeuroImage*, 2016.

[5] **Cai, Weixin**, Burman, Prabir, and Patrick, Joshua D., "Semiparametric heteroscedastic model for seasonal time series", *Submitted to Journal of Time Series Analysis*, 2014.

[6] **Cai, Weixin**, Patrick, Joshua D., and Burman, Prabir, "Oracally efficient spline smoothing of functional coefficient regression models with simultaneous confidence band", *JSM Proceedings, Nonparametric Statistics Section*, 2014.

[7] **Cai, Weixin**, Aue, Alexander, and Paul, Debashis, "Bias correction for high-dimensional markowitz problem under linear temporal dependence", *In Preparation*,

[8] **Cai, Weixin** and Yu, Philip L.H., "Multivariate buffered autoregression model", *Senior Thesis, The University of Hong Kong*, 2015.

Awards and Honors

04/2016 **JSM Student Travel Awards, SF Bay Area Chapter of the ASA** .
Awarded to 4 Ph.D. students in San Francisco Bay area. The only first-year receiver

04/2016 **Saw Gold Medal in Statistics**, *University of Hong Kong*.
Awarded to the highest academic achievement graduate in Statistics

02/2016 **Saw See Hock Statistics Scholarship**, *University of Hong Kong*.
Awarded to top 1 graduate of HKU Statistics

2014 **Undergraduate Research Fellowship & Overseas Research Internship Award**, *University of Hong Kong*.
Awarded to top 8 most prestigious undergraduate researchers across all science, engineering and humanities.

2013 **C.V. Starr Scholarship** , *University of Hong Kong*.

Computing Skills

Research: R, PYTHON, MATLAB, JULIA, Shell Scripting,

Programming: Spark, TensorFlow, SAS, SQL

Apps/Other: Git, Amazon EC2, LaTeX, Microsoft Office

Selected Talks

08/2016 **Symmetric Tensor Regression with Applications in Neuroimaging Data Analysis**, *Joint Statistics Meetings 2016*, Chicago.

06/2016 **Symmetric Tensor Regression with Applications in Neuroimaging Data Analysis**, *SFASA award invited seminar*, Stanford.

03/2016 **Symmetric Tensor Regression and Neuroimaging Data Analysis**, *BSTARS lightning talk*, Berkeley.

08/2014 **Oracally Efficient Spline Smoothing of Functional Coefficient Regression Models with Simultaneous Confidence Band**, *Joint Statistics Meetings 2014*, Seattle.

Teaching Experience

08/2016–present **Teaching Assistant**, *Targeted Learning with Biomedical Big Data (PH 295)*, UC Berkeley.
with Prof. Mark J. van der Laan

01/2016–05/2016 **Teaching Assistant**, *Big Data in Biostatistics*, UC Berkeley.
with Prof. Lexin Li