Math 12240: Advanced Theory of Statistics II   Spring 2017
Project Topics

1. Efficient estimation for censored linear models

(a) Ding, Y. and Nan, B. (2011). A sieve M-theorem for bundled parameters in semiparametric models, with application to the efficient estimation in a linear model for censored data. *Ann. Statist.*, 39, 3032–3061.

(b) Zeng, D. and Lin, D. Y. (2007). Efficient estimation for the accelerated failure time model. *J. Am. Statist. Assoc.*, 102, 1387–1396.

2. Smooth estimation for interval-censored data

(a) Groeneboom, P. (2014). Maximum smoothed likelihood estimators for the interval censoring model. *Ann. Statist.*, 42, 2092–2137.

(b) Groeneboom, P., Jongbloed, G. and Witte, B. I. (2010). Maximum smoothed likelihood estimation and smoothed maximum likelihood estimation in the current status model. *Ann. Statist.*, 38, 352–387.

3. Log-concave density estimation

(a) Kim, A. K. H. and Samworth, R. J. (2016). Global rates of convergence in log-concave density estimation. *Ann. Statist.*, 44, 2756–2779.

(b) Walther, G. (2009). Inference and modeling with log-concave distributions. *Statist. Sci.*, 24, 319–327.

4. Additive models with shape constraints

(a) Chen, Y. and Samworth, R. J. (2016). Generalized additive and index models with shape constraints. *J. R. Statist. Soc.* B, 78, 729–754.

(b) Pya, N. and Wood, S. N. (2015). Shape constrained additive models. *Statist. Comp.*, 25, 543–559.

5. Nonparametric estimation of mean and covariance functions

(a) Zhang, X. and Wang, J.-L. (2016). From sparse to dense functional data and beyond. *Ann. Statist.*, 44, 2281–2321.

(b) Li, Y. and Hsing, T. (2010). Uniform convergence rates for nonparametric regression and principal component analysis in functional/longitudinal data. *Ann. Statist.*, 38, 3321–3351.

6. Locally sparse estimation for functional linear models

(a) Lin, Z., Cao, J., Wang, L. and Wang, H. (2017). Locally sparse estimator for functional linear regression models. *J. Comp. Graph. Statist.*, 26, 306–318.

(b) James, G. M., Wang, J. and Zhu, J. (2009). Functional linear regression that's interpretable. *Ann. Statist.*, 37, 2083–2108.

7. Functional Cox regression

(a) Qu, S., Wang, J.-L. and Wang, X. (2016). Optimal estimation for the functional Cox model. *Ann. Statist.*, 44, 1708–1738.

(b) Lee, E., Zhu, H., Kong, K., Wang, Y., Giovanello, K. S., Ibrahim, J. G. and ADNI (2015). BFLCRM: A Bayesian functional linear Cox regression model for predicting time to conversion to Alzheimer's disease. *Ann. Appl. Statist.*, 9, 2153–2178.

8. Semiparametric models with missing data

(a) Cao, W., Tsiatis, A. A. and Davidian, M. (2009). Improving efficiency and robustness of the doubly robust estimator for a population mean with incomplete data. *Biometrika*, 96, 723–734.

(b) Yu, M. and Nan, B. (2006). A revisit of semiparametric regression models with missing data. *Statist. Sinica*, 16, 1193–1212.

9. Nonparametric regression with Berkson measurement errors

(a) Schennach, S. M. (2013). Regressions with Berkson errors in covariates—A nonparametric approach. *Ann. Statist.*, 41, 1642–1668.

(b) Delaigle, A., Hall, P. and Qiu, P. (2006). Nonparametric methods for solving the Berkson errors-in-variables problem. *J. R. Statist. Soc.* B, 68, 201–220.

10. Extensions of varying coefficient models

(a) Ma, S. and Song, P. X.-K. (2015). Varying index coefficient models, *J. Am. Statist. Assoc.*, 110, 341–356.

(b) Jiang, Q., Wang, H., Xia, Y. and Jiang, G. (2013). On a principal varying coefficient model. *J. Am. Statist. Assoc.*, 108, 228–236.

11. Estimation and testing for single-index models

(a) Lepski, O. and Serdyukova, N. (2014). Adaptive estimation under single-index constraint in a regression model. *Ann. Statist.*, 42, 1-28.

(b) Cui, X., Härdle, W. K. and Zhu, L. (2011). The EFM approach for single-index models. *Ann. Statist.*, 39, 1658–1688.

12. Partially linear single-index models

(a) Liang, H., Liu, X., Li, R. and Tsai, C.-L. (2010). Estimation and testing for partially linear single-index models. *Ann. Statist.*, 38, 3811–3836.

(b) Wang, J.-L., Xue, L., Zhu, L. and Chong, Y. S. (2010). Estimation for a partial-linear single-index model. *Ann. Statist.*, 38, 246–274.

13. High-dimensional Cox regression (Contributed)

(a) Fang, E. X., Ning, Y. and Liu, H. (2017). Testing and confidence intervals for high dimensional proportional hazards models. *J. R. Statist. Soc.* B, to appear.

(b) Huang, J., Sun, T., Ying, Z., Yu, Y. and Zhang, C.-H. (2013). Oracle inequalities for the lasso in the Cox model. *Ann. Statist.*, 41, 1142–1165.