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La Trobe University
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Education

B.S. with Honours (H1), La Trobe University, 2001.

Majors: Statistics and Applied Mathematics.

Honours: Statistical Science.

Ph.D. Statistical Science, La Trobe University, 2005.

Title of Dissertation: Influence Functions for Sliced Inverse Regression

Prizes, Awards and Honours

Guest Prize Presenter at the Peninsula School Senior Prize Giving, 2008.

La Trobe University Citation for Outstanding Contribution to Student Learning, 2008.

for sustained dedication to a student-orientated teaching environment designed to encourage and assist students with disparate statistics backgrounds within a nationally accredited statistics program.

Faculty of Science, Technology and Engineering Citation for Outstanding Contribution to Student Learning, La Trobe University, 2008.

for sustained dedication to a student-orientated teaching environment designed to encourage and assist students with disparate statistics backgrounds within a nationally accredited statistics program.

Recipient of an Australian Postgraduate Award (APA) scholarship, 2001-2004.

Alumni Association Prize, La Trobe University, 1999.

Awarded to the outstanding student in the final year of a pass degree or the penultimate year of an honours degree in the Faculty of Science, Technology and Engineering for the year 1999.

Department of Statistical Science Prize, La Trobe University, 1999.

Awarded to the most outstanding student in third-year statistics subjects in the Faculty of Science, Technology and Engineering for the year 1999.

Department Prize for Applied Mathematics, La Trobe University, 1999.

Awarded to the most outstanding student in third-year applied mathematics subjects in the Faculty of Science, Technology and Engineering for the year 1999.

Teaching and Research Fields

Teaching: Applied statistics at second year, sample surveys and multivariate analysis at third year and regression analysis including dimension reduction at 4th year.

Research: I am interested in robustness properties of statistical estimators, in particular with respect to dimension reduction methods and meta analysis. I am also interested in the visualization of high dimensional data after dimension reduction. I am currently involved in clinical trial research involving weight loss studies.

Academic Experience

La Trobe University, Department of Mathematics and Statistics

Casual Statistics Tutor and Lecturer, 2001-2004.

Lecturer, 2004-2008.

Senior Lecturer, 2009-present.

Research

Working Papers

Prendergast, L. A. & Li Wai Suen, C. (2009) A new and practical measure of influence for sample principal components.

Papers Under Review

Jazayeri, M., Prendergast, L. A., & Staudte, R.G. (2009) Dimension reduction for binary response data by PCA followed by SIR or SAVE, and a procedure for fast cross-validation of classification rules.

Prendergast, L. A. & Smith, J. A. (2008), Influence functions for dimension reduction methods: An example influence study of principal Hessian direction analysis.

Publications in Refereed Journals

6. Prendergast, L. A. (2008) A note on sensitivity of principal component subspaces and the efficient detection of influential observations in high dimensions, *Electronic Journal of Statistics*, **2**, 454-467 (electronic). [Click here for article](#)
5. Prendergast, L. A. (2008) Trimming influential observations for improved single-index model estimated sufficient summary plots, *Computational Statistics and Data Analysis*, **52**, 5319-5327 .
4. Prendergast, L. A. & Smith, J. A. (2007) Sensitivity of principal Hessian direction Analysis, *Electronic Journal of Statistics*, **1**, 253-267 (electronic). [Click here for article](#)
3. Prendergast, L. A. (2007) Implications of influence function analysis for sliced inverse regression and sliced average variance estimation, *Biometrika*, **94**, 585-601.
2. Prendergast, L. A. (2006) Detecting influential observations in Sliced Inverse Regression analysis, *Australian and New Zealand Journal of Statistics*, **48**, 285-304.
1. Prendergast, L. A. (2005) Influence functions for Sliced Inverse Regression, *Scandinavian Journal of Statistics*, **32**, 385-404.

Non-refereed publications

4. Delbridge, E. A., Prendergast, L. A., Pritchard, J. E., Proietto, J. (2008) The effect of a high protein weight maintenance diet on bone mineral density following a large and rapid weight loss, *Proceedings of the Nutrition Society of Australia*, **17**, Supp. 3 S137.
3. Delbridge, E. A., Prendergast, L. A., Pritchard, J. E., Proietto, J. (2006) The effect of a high protein vs high carbohydrate diet on cardiovascular risk factors, *Asia Pacific Journal of Clinical Nutrition*, **15**, Supp. 3 S42.
2. Delbridge, E. A., Prendergast, L. A., Pritchard, J. E., Proietto, J. (2006) Long-term weight maintenance; does diet composition matter? A randomized, prospective trial, *Obesity Reviews*, **7**, Supp. 2 38-38.
1. Delbridge, E. A., Prendergast, L. A., Pritchard, J. E., Proietto, J. (2005) Predicting weight loss in overweight and obese people using a very low energy diet, *Proceedings of the Nutrition Society of Australia*, **29**, HEC Press.

Talks, Seminars and Workshops

Workshops Delivered

SSAI Workshop: An introduction to R, *La Trobe University*, November 27, 10am-4pm, 2008.

Invited Talks

Some challenges faced when dealing with high dimensional data, *ICE-EM: What's happening in Mathematics?*, *La Trobe University*, Melbourne, Australia, April 15 2008.

Detecting influential observations on the sliced inverse regression dimension reduction subspace, *Department of Mathematics and Statistics, University of Melbourne*, Melbourne, Australia, November 3 2005.

Influence Functions for Sliced Inverse Regression, *Mathematical Sciences Institute, Australian National University*, Canberra, Australia, December 2 2004.

Conference Presentations

Trimming influential observations for improved single-index model estimated sufficient summary plots, *Australian Statistical Conference*, Melbourne, Australia, July 1, 2008.

Influence function comparisons for Sliced Inverse Regression and Sliced Average Variance Estimates, *Australian Statistical Conference / New Zealand Statistical Association Conference*, Auckland, New Zealand, July 4, 2006.

Influence functions for Sliced Inverse Regression (Poster presentation), *International Biometric Conference in parallel with the Australian Statistical Conference*, Cairns, Australia, July 11-16, 2004.

Influence functions for Sliced Inverse Regression, *Recent Developments in Sliced Inverse Regression*, Melbourne, Australia, 2002.

La Trobe University Seminars

Considerations for the detection and treatment of influential observations in single-index model regression analysis, *La Trobe University Statistics Seminar Series*, 2007

Detecting influential observations on the sliced inverse regression dimension reduction subspace, *La Trobe University Statistics Seminar Series*, November 18, 2005

Influence functions for Sliced Inverse Regression, *La Trobe University Statistics Seminar Series*, April 30, 2004

An Introduction to Sliced Inverse Regression, *La Trobe University Statistics Seminar Series*, September 22, 2002

Supervision

Masters by Research

Mitra Jazayeri (as a Co-supervisor with Professor Robert Staudte) *Approximating Cross-validation results for SIR and SAVE preceded by Principal Component Dimension Reduction*. Thesis passed November 2008.

Masters by Coursework

Lindsey Kevan *Influence function considerations for Principal Component Analysis*. 2006.

Honours

Connie Li Wai Suen *Power Series expansions for eigenvalue and eigenvector estimators under contamination*. 2008.

Michael Malloy *The Influence Function: A useful diagnostic tool for robustness*. 2008.

Amanda Shaker *SIR and SAVE for discrete binary classification*. 2008.

Nathan Bock *An influence diagnostic for single-index model Ordinary Least Squares regression*. 2007.

Callum McLean *Sliced Inverse Regression*. 2005.

Jodie Smith *The influence function*. 2005.

Professional Activities and Memberships

Current Professional Memberships

[Statistical Society of Australia \(SSAI\)](#)

[Institute of Mathematical Statistics \(IMS\)](#)

Refereeing

Computational Statistics and Data Analysis (2)

Computers & Chemical Engineering (1)

Journal of the American Statistical Association (1)

Pakistan Journal of Statistics (1)