Sevvandi Kandanaarachchi

Curriculum Vitae

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Mathematical Sciences, RMIT University, Melbourne, VIC 3000, Australia.
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Education and Qualifications

2015	Graduate Certificate in Data Mining and Applications	Stanford University
2011	PhD in Mathematics	Monash University
2007	M.Sc. Preliminary in Mathematics	Monash University
2002	B.Sc. Eng.(Hons) in Computer Science and Engineering - First Class Honours	University of Moratuwa, Sri Lanka

Employment history - post PhD

2019 – present	**Lecturer**, Mathematical Sciences, RMIT University.
2019 – 2019	**Research Fellow**, School of Mathematics and Statistics, University of Melbourne.
2018 – 2019	**Research Fellow**, Department of Econometrics & Business Statistics, Monash Business School, Monash University.
2017 – present	**Associate Investigator**, ARC Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS).
2016 – 2017	**Research Fellow**, MAXIMA, School of Mathematical Sciences, Monash University.
2014 – 2015	**Adjunct Research Fellow**, School of Mathematical Sciences, Monash University (remotely, while in Singapore) .
2011 – 2015	**Assistant Professor in Mathematics**, DigiPen Institute of Technology, Singapore (A fully teaching position).

Honours and awards

2018 ARC Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS) Impact & Engagement Award
2018 AustMS Anne Penfold Street Award
2017 Awarded second prize in the Vegetation Detection Challenge organised by the Department of Environment, Land, Water and Planning
2010 Best Speaker - Pure Mathematics, 2010 Victorian Mathematics and Statistics Students' Conference
2010 Monash postgraduate travel grant award
2007 Endeavour international postgraduate research scholarship
2007 Monash international postgraduate research scholarship & Monash graduate scholarship

Publications

I had a career interruption from research during 2011 - 2015 due to family reasons. As a result, I worked in a fully teaching capacity during this period. From 2016 - 2017 I worked on an industry project, which impacted publications due to its sensitive nature. The research conducted in 2015 was additional to my normal job, and was conducted after hours.
The symbol * denotes first author for pure mathematics publications, where author names are listed alphabetically.

PhD thesis

1. Kandanaarachchi, S. (2011). "Axially Symmetric Volume Preserving Mean Curvature Flow". PhD thesis. Monash University, Australia.

Refereed journal papers

1. *Athanassenas, M. and S. Kandanaarachchi (2020). Singularities of axially symmetric volume preserving mean curvature flow. *Communications in Analysis and Geometry*. Accepted.
2. Kandanaarachchi, S., M. A. Muñoz, R. J. Hyndman, and K. Smith-Miles (2020). On normalization and algorithm selection for unsupervised outlier detection. *Data Mining and Knowledge Discovery* **34**(2), 309–354.

3. Leigh, C., S. Kandanaarachchi, J. M. McGree, R. J. Hyndman, O. Alsibai, K. Mengersen, and E. E. Peterson (2019). Predicting sediment and nutrient concentrations from high-frequency water-quality data. *PLOS ONE* **14**(8), 1–22.
4. Leigh, C., O. Alsibai, R. J. Hyndman, S. Kandanaarachchi, O. C. King, J. M. McGree, C. Neelamraju, J. Strauss, P. D. Talagala, R. D. Turner, et al. (2019). A framework for automated anomaly detection in high frequency water-quality data from *in situ* sensors. *Science of The Total Environment* **664**, 885–898.
5. Talagala, P. D., R. J. Hyndman, K. Smith-Miles, S. Kandanaarachchi, and M. A. Muñoz (2019). Anomaly detection in streaming nonstationary temporal data. *Journal of Computational and Graphical Statistics*, 1–21.
6. Ryan, S., S. Thaler, and S. Kandanaarachchi (2016). Machine learning methods for predicting the outcome of hypervelocity impact events. *Expert Systems with Applications* **45**, 23–39.
7. *Athanassenas, M. and S. Kandanaarachchi (2012). On the convergence of axially symmetric volume preserving mean curvature flow. *Pac. J. Math.* **259**(1), 41–54.

Refereed conference proceedings

1. Kandanaarachchi, S., M. A. Muñoz, and K. Smith-Miles (2019). Instance Space Analysis for Unsupervised Outlier Detection. In: *Proceedings of the 1st Workshop on Evaluation and Experimental Design in Data Mining and Machine Learning co-located with SIAM International Conference on Data Mining (SDM 2019), Calgary, Alberta, Canada, May 4th, 2019*. pp.32–41. http://ceur-ws.org/Vol-2436/article%5C_4.pdf.
2. Ryan, S., S. Kandanaarachchi, and K. Smith-Miles (2015). Support vector machines for characterizing Whipple shield performance. In: *Proceedings of the 2015 hypervelocity impact symposium.* 26-30 April 2015. Boulder, Colorado USA.

Working papers under revision

1. Kandanaarachchi, S., N. Anantharama, and M. A. Muñoz (2020). *Early detection of vegetation ignition due to powerline faults*. Working Paper. http://bit.ly/vegignite.
2. Kandanaarachchi, S. and R. J. Hyndman (2019). *Dimension reduction for outlier detection using DOBIN*. Working Paper. https://robjhyndman.com/publications/dobin/.
3. *Head, J. and S. Kandanaarachchi (2017). *On the extension of axially symmetric volume preserving mean curvature flow*. Working Paper. School of Mathematical Sciences, Monash University. https://arxiv.org/abs/1301.1125.

Working papers under review

1. *Head, J. and S. Kandanaarachchi (2019). *Singularity formation in axially symmetric mean curvature flow with Neumann boundary*. Working Paper. https://arxiv.org/abs/1908.02871.
2. Sadia, F., S. Kandanaarachchi, K. Smith-Miles, and J. Keith (2019). *Event detection in spatio-temporal data using a Bayesian segmented ARMA change-point model*. Working Paper.
3. Kandanaarachchi, S., R. J. Hyndman, and K. Smith-Miles (2018). *Early classification of spatio-temporal events using partial information*. Working Paper. https://www.researchgate.net/publication/329773142_Early_classification_of_spatio-temporal_events_using_time-varying_models.

Consulting reports

1. Kandanaarachchi, S., M. A. Muñoz, R. Hyndman, and K. Smith-Miles (2019). *Report on Dynamic Classifiers*. Report for Future Fibre Technologies Ltd. Monash University, University of Melbourne.
2. Kandanaarachchi, S., M. A. Muñoz, R. Hyndman, and K. Smith-Miles (2019). *Research Summary*. Report for Future Fibre Technologies Ltd. Monash University, University of Melbourne.
3. Kandanaarachchi, S., K. Smith-Miles, and M. A. Muñoz (2017). *Final Technical Report 2017*. Report for Future Fibre Technologies Ltd. MAXIMA, Monash University.
4. Kandanaarachchi, S., D. Talagala, and M. A. Muñoz (2017). *Algorithm for the detection of risk of bushfire*. Report for the Department of Environment, Land, Water and Planning, State Government of Victoria. MAXIMA, Monash University.
5. Kandanaarachchi, S., K. Smith-Miles, and M. A. Muñoz (2016). *Final Technical Report 2016*. Report for Future Fibre Technologies Ltd. MAXIMA, Monash University.
6. Kandanaarachchi, S., K. Smith-Miles, and M. A. Muñoz (2016). *Relevant event detection and signal analysis techniques*. Report for Future Fibre Technologies Ltd. MAXIMA, Monash University.

Software (R packages)

1. Kandanaarachchi, S. (2019). *dobin: Dimension Reduction for Outlier Detection*. R package version 1.0.2. https://CRAN.R-project.org/package=dobin.
2. Kandanaarachchi, S. (2019). *eventstream: An implementation of streaming events and their classification*. R package version 1.0.0. https://CRAN.R-project.org/package=eventstream.
3. Kandanaarachchi, S. (2018). *outselect: Algorithm selection for unsupervised outlier detection*. R package version 0.0.0.9000. https://github.com/sevvandi/outselect.
4. McCormick, T. H., A. Raftery, D. Madigan, S. Kandanaarachchi [ctb], and H. Sevcikova [ctb] (2018). *dma: Dynamic model averaging for binary and continuous outcomes*. Version 1.4. https://cran.r-project.org/web/packages/dma/index.html.

Teaching & Supervision

- 2017 @Monash - Design and delivery of lectures, assignments and final examination for a part of MTH3310 - Applied Mathematical Modelling. Received excellent reviews in unit evaluations.
- 2011-2015 @DigiPen Singapore
  - Design and delivery of lectures, assignments, midterm and final examination for a variety of courses including Numerical Methods, Linear Algebra I and II, Calculus I and II & Discrete Mathematics.
  - Consistently received excellent reviews from students. Often described as an "awesome instructor".
  - Experience in the flipped classroom approach and the use of mobile apps for lectures, which were a great success.
  - Conduct independent studies which are similar to Honours projects in Australia.

Grants

2017	S. Kandanaarachchi, M. A. Munoz, P. D. Talagala. " Powerline bushfire safety". *Funding from ACEMS, Research Support Scheme.*	$13467.60
2016–2017	K. Smith-Miles (PCI), M.A. Munoz (CI), S. Kandanaarachchi (CI), J. Katsifolis (PI). "New mathematical models for data handling phase 2". *Funding from the Department of Industry, Innovation and Science (Comm) & Future Fibre Technologies.*	$100,000

Industry Engagement

2018–2019	Continue with Future Fibre Technologies on a Linkage project – detecting and classifying intrusions in noisy time series data.
2017	With Department of Environment, Land Water and Panning on the Powerline Bushfire Safety Project.
2016–2017	With Future Fibre Technologies on two successive Research Connection Grants – on intrusion detection.

Research visits

2018	Queensland University of Technology, Brisbane, Australia
2010	Australian National University, Canberra, Australia
2009	Max Planck Institute for Gravitational Physics, Potsdam-Golm, Germany

Conferences and Seminars

2019	International Symposium on Forecasting, *Thessaloniki, Greece*
2019	1st Workshop on Evaluation and Experimental Design in Data Mining and Machine Learning – SIAM International Conference on Data Mining, *Calgary, Canada*
2019	Faculty of IT Machine Learning seminar series, *Monash University, Clayton Campus, Australia*
2019	International Workshop on Econometrics and Data Analytics, *Monash University, Caulfield Campus, Australia*
2018	AustMS Conference, *University of Adelaide, Australia*
2018	useR! 2018, *Brisbane, Australia.*
2017	WIMSIG Conference 2017, *University of South Australia, Australia.*
2010	35th Spring Lecture Series, Minimal Surfaces and Mean Curvature Flow, *The University of Arkansas, Fayetteville, Arkansas, USA*
2010	Victorian Mathematics and Statistics Students' Conference, *University of Melbourne, Australia*
2008	Geometric Analysis Workshop, *University of Wollongong, Australia*

Membership of Associations

- Member, AustMS (Australian Mathematical Society).
- Member, ANZIAM (Australia and New Zealand Industrial and Applied Mathematics) - Division of AustMS.
- Member, WIMSIG (Women in Mathematics Special Interest Group) Executive Committee

Outreach and service

2019	Organised a special lecture and a panel session for the International Women in Mathematics Day
2019	Member of the organising committee for the Women in Mathematics Conference, 2020
2019	Organise NUMBAT seminars for the department of Econometrics and Business Statistics
2018	Co-conducted two podcasts on space debris for ACEMS' podcast series
2018	Contributed to the Econometrics booth on Monash Open Day.
2018	Panellist on the "Diversity in STEM" discussion at the AMSI Summer School.
2017	Contributed to the Mathematics booth on Monash Open Day.
2017	Visited Firbank Grammar Careers Night to represent women in STEM and motivate students.
2017	Initiated and carried out plastic bag recycling at the School of Mathematical Sciences.
2017	Reviewed a paper for the journal *Expert Systems with Applications*.
2011 – 2015	Academic advisor. Consistently contributed to Open House and Career Fairs.

Referees

1. Professor Rob J. Hyndman
   Department of Econometrics and Business Statistics
   Monash University, Clayton Campus, VIC 3800
   rob.hyndman@monash.edu
   +613 9905 5141

2. Professor Kate Smith-Miles
   School of Mathematics and Statistics
   Peter Hall Building, University of Melbourne
   smith-miles@unimelb.edu.au
   +613 9035 3425

3. Professor Michael Jahn
   Department Chair of General Education
   DigiPen Institute of Technology, Singapore
   510 Dover Road, ♯ 03-01 SIT@SP Building
   Singapore 139660
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