Curriculum Vitae

Sujit K. Sahu

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ESTEEM AND ACADEMIC QUALIFICATIONS

- **h-index: 32, i10-index: 55** & more than 5500 citations todate.
- **PhD in Statistics**, University of Connecticut, 1994.
  Dissertation Title: Strategies for Efficient Implementation of MCMC Algorithms.
  Advisor: Prof Alan E. Gelfand.
- **Master of Statistics**, Indian Statistical Institute, 1989.
- **BSc (Hons) in Statistics**, University of Calcutta, 1987.

EMPLOYMENT

- Professor, University of Southampton, Since 2013.
- Senior Lecturer, University of Southampton, 2004–2013.
- Lecturer, University of Southampton, 1999–2004.
- Lecturer, Cardiff University, 1997–1999.
- Research Associate, University of Cambridge, 1994–1996.

RESEARCH POSITIONS

- Visiting Lecturer, Australian National University, November 2011.
- Visiting Lecturer, Duke University, September 2011.
- Senior Research Fellow, National Exposure Research Laboratory, United States Environmental Protection Agency (USEPA), Research Triangle Park, July 2007-January 2008.
- Visiting Fellow, Duke University and SAMSI, March–August 2003.
- Teaching Assistant, University of Connecticut, 1990–1994.

CURRENT RESEARCH INTERESTS

Bayesian Hierarchical Modelling and Computation, Data Science and Machine Learning, Spatio-temporal Modelling.

- I am interested in practical Bayesian modelling and computation for understanding and interpreting large and complex data sets. Such data sets may arise from systems that vary over space, time or both, and may be multi-variate, mis-measured and spatially mis-aligned and may also contain missing observations. The ultimate aim of my research is to reduce uncertainty in inferential statements by developing fast Bayesian model based computation methods.

PUBLICATIONS

Techinal Reports and Published Papers:

69. Sahu, S. K. (2023) Introduction to Probability, Statistics & R, Foundations for Data-Based Sciences (1st ed.). Springer, ISBN: 978-3-031-378644-5.

68. Sahu, S. K. (2022) Bayesian Modeling of Spatio-Temporal Data with R (1st ed.). Chapman and Hall/CRC. https://doi.org/10.1201/9780429318443. ISBN: 978-0-367-27798-7.

67. Pierfrancesco Alaimo Di Loro, Xiang Qian, Sahu, S. K. , Dankmar Böhning (2023) A novel Bayesian spatio-temporal model for the disease infection rate of Covid-19 cases in England. *Under review*, University of Southampton.

66. Utazi, C. E., Jochem, W. C., Gacic-Dobo, Marta, Murphy, P., Sahu, S. K. , Danovaro-Holliday, M. C., Tatem, A. J. (2023) Bayesian hierarchical modelling approaches for combining information from multiple data sources to produce annual estimates of national immunization coverage. *Under review*, University of Southampton.

65. Utazi CE, Aheto JMK, Chan HMT, Tatem AJ, Sahu, S. K. . (2022) Conditional probability and ratio-based approaches for mapping the coverage of multi-dose vaccines. *Statistics in Medicine*. 2022 Dec 20;41(29):5662-5678. doi: 10.1002/sim.9586. Epub 2022 Sep 21. PMID: 36129171.

64. Sahu, S. K. , S. K. and Böhning, D. (2021) Bayesian spatio-temporal joint disease mapping of Covid-19 cases and deaths in local authorities of England. Spatial Statistics. doi: 10.1016/j.spasta.2021.100519.

63. Hammond, M.L., Beaulieu, C., Henson, S.A. and Sahu, S. K. (2020) Regional surface chlorophyll trends and uncertainties in the global ocean. *Scientific Reports*, **10**, 15273 (2020). doi:10.1038/s41598-020-72073-9

62. Sambasivan, R., Das, S. and Sahu, S. K. (2020) A Bayesian Perspective of Statistical Machine Learning for Big Data. *Computational Statistics.* **35**, 893-930. doi:10.1007/s00180-020-00970-8.

61. Sahu, S. K.,Bakar, K. S., Zhan, J., Campbell, J. L. and Yanai, R. D. (2020) Spatio-temporal Bayesian modeling of precipitation using rain gauge data from the Hubbard Brook Experimental Forest, New Hampshire, USA. *Proceedings of the Joint Statistical Meetings*, American Statistical Association. Pages: 77-92.

60. Sahu, S. K.,Bass, M. R., Sabariego, C., Cieza, A., Fellinghauer, C. S. and Chatterji, S. (2020) Extending the inferential capability of a generalised partial credit model using Bayesian computation: An application to an international disability survey developed by WHO and the World Bank. *Journal of the Royal Statistical Society*, Series C, **69**, 131-150.

59. Nicolis, O., Díaz, M. Sahu, S. K.,and Marín, J. C. (2019) Bayesian spatio-temporal modelling for estimating short-term exposure to air pollution in Santiago de Chile. *Environmetrics*, **30**, doi: 10.1002/env.2574

58. Bass, M. R. and Sahu, S. K. (2019) Dynamically Updated Spatially Varying Parameterizations of Hierarchical Bayesian Models for Spatial Data. *Journal of Computational and Graphical Statistics.* **28**, 105-116. doi:10.1080/10618600.2018.1482761.

57. Hammond, M. L., Beaulieu, C., Henson, S. A. and Sahu, S. K. (2018). Assessing the effect of discontinuities in the ocean color satellite record on chlorophyll trends and their uncertainties. *Geophysical Research Letters,* **45**, 7654-7662. doi:10.1029/2017GL076928.

56. Hammond, M. L., Beaulieu, C. Sahu, S. K.,Henson, S. A. (2017). Assessing trends and uncertainties in satellite-era ocean chlorophyll using space-time modeling. *Global Biogeochemical Cycles.* **31**, 1103-1117, doi: 10.1002/2016GB005600.

55. Utazi, C. E., Sahu, S. K. Atkinson, P. M., Tejedor-Garavito, N., Lloyd C. T. and Tatem, A. J. (2018). Assessing the coverage of demographic surveillance systems in sub-Saharan Africa for characterising the drivers of childhood mortality. *BMJ Global Health*, doi:10.1136/bmjgh-2017-000611.

54. Mukhopadhyay, S. and Sahu, S. K. (2017) A Bayesian spatio-temporal model to estimate long term exposure to outdoor air pollution at coarser administrative geographies in England and Wales. *Journal of the Royal Statistical Society*, Series A, **181**, 465-486, doi:10.1111/rssa.12299.

    A webinar was hosted by the Royal Statistical Society on February 21, 2018 with Prof Richard Chandler (UCL) in the Chair and Prof Jonathan Rougier (Bristol) as the discussant.

53. Pannullo, F. , Lee, D., Neal, L., Dalvi, M., Agnew, P., O'Connor, F. M., Mukhopadhyay, S., Sahu, S. K.,and Sarran, C. (2017). Quantifying the impact of current and future concentrations of air pollutants on respiratory disease risk in England. *Environmental Health*, 16, 29. (doi:10.1186/s12940-017-0237-1) (PMID:28347336) (PMCID:PMC5368918).

52. Lee, D., Mukhopadhyay, S., Rushworth, A. and Sahu, S. K. (2017) A rigorous statistical framework for estimating the long-term health impact of air pollution. Click here for supplementary materials. *Biostatistics*, **18**, 370-385, doi: 10.1093/biostatistics/kxw048.

51. Bass, M. R. and Sahu, S. K. (2017) A comparison of centering parameterisations of Gaussian process based models for Bayesian computation using MCMC. *Statistics and Computing*, **27**, 1491-1512. doi: 10.1007/s11222-016-9700-z.

50. Utazi, C. E., Sahu, S. K.,Atkinson, P. M., Tejedor, N. and Tatem, A. J. (2016) A probabilistic predictive Bayesian approach for determining the representativeness of health and demographic surveillance networks. *Spatial Statistics*, **17**, 161-178.

49. Pirani, M., Panton, A., Purdie, D. A., Sahu, S. K. (2016) Modelling macronutrient dynamics in the Hampshire Avon river: A Bayesian approach to estimate effect of storm events. *Science of the Total Environment*,Dec 1;572:1449-1460. http://dx.doi.org/10.1016/j.scitotenv.2016.04.129.

48. Minty, J., Harper, H., Sarran, C., Sahu, S. K.,and Baffour, B. (2013). Simulating Occupancy for Short-Term Hospital Planning. *Technical Report, University of Southampton*.

47. Sahu, S. K. and Mukhopadhyay, S. (2016) On generating a flexible class of anisotropic spatial models using Gaussian predictive processes. *Technical Report, University of Southampton.*

46. Lee, D. and Sahu, S. K. (2016) Estimating the health impact of environmental pollution fields. In *Handbook of Spatial Epidemiology*. Editors: Lawson, A., Banerjee, S., Haining, R. and Ugarte, L. Chapman and Hall/CRC Press, pp 271-288.

45. Sahu, S. K. (2015) Bayesian Spatio-Temporal Modelling to Deliver More Accurate and Instantaneous Air Pollution Forecasts. In *UK Success Stories in Industrial Mathematics*. Editors: P. Aston, T. Mulholland and K. Tant. Springer International, pp 67-74.

44. Bakar, K. S. and Sahu, S. K. (2015) spTimer: Spatio-Temporal Bayesian Modelling Using R. Journal of Statistical Software. Volume **63**, doi: 10.18637/jss.v063.i15.

43. Sahu, S. K.,Bakar, K. S. and Awang, N. (2015) Bayesian Forecasting Using Hierarchical Spatio-temporal Models with Applications to Ozone Levels in the Eastern United States. In *Geometry Driven Statistics*, Editors: I. L. Dryden and J. Kent. John Wiley and Sons. Chapter 13, pp 260-281.

42. Ewings, S. M., Sahu, S. K.,Byrne, C. D. and Chipperfield, A. J. (2015) A Bayesian network for modelling blood glucose concentration and exercise for type 1 diabetes. *Statistical Methods in Medical Research*, **24**, 342-372, doi: 10.1177/0962280214520732.

41. Lee, D., Rushworth, A., and Sahu, S. K. (2014) A Bayesian localised conditional auto-regressive model for estimating the health effects of air pollution. *Biometrics*, **70**, 419-429.

40. Ren, C., Sun, D. and Sahu, S. K. (2013) Objective Bayesian Analysis of Spatial Models with Separable Correlation Functions. *The Canadaian Journal of Statistics,* **41**, 488-507.

39. Sahu, S. K.,Baffour, B., Harper, P., Minty, J. and Sarran, C. (2013) A Hierarchical Bayesian Model for Improving Short-Term Forecasting of Hospital Demand by Including Meteorological Information. *Journal of the Royal Statistical Society*, Series A. **177**, 39–61.

38. Sahu, S. K. and Bakar, K. S. (2012). Hierarchical Bayesian auto-regressive models for large space time data with applications to ozone concentration modelling (with discussion). *Applied Stochastic Models in Business and Industry*, **28**, 395-415.

37. Gelfand, A. E., Sahu, S. K. and Holland, D. M. (2012) On the Effect of Preferential Sampling in Spatial Prediction. *Environmetrics*, **23**, 565-578.

36. Sahu, S. K. (2012) Hierarchical Bayesian Models for Space-Time Air Pollution Data. In *Time Series Analysis, Methods and Applications, Vol 30*, Editors: T Subba Rao, S. Subba Rao and C R Rao. Elsevier Publishers, Amsterdam, pp 477-495.

35. Sahu, S. K. and Bakar, K. S. (2012) A comparison of Bayesian Models for Daily Ozone Concentration Levels. *Statistical Methodology*, **9**, 144-157.

34. Sahu, S. K.,Yip, S. and Holland, D. M. (2011) A fast Bayesian method for updating and forecasting hourly ozone levels. *Environmental and Ecological Statistics*, **18**, 185-207.

33. Sahu, S. K.,Gelfand, A. E. and Holland, D. M. (2010) Fusing point and areal level space-time data with application to wet deposition. *Journal of the Royal Statistical Society*, Series C, Applied Statistics, **59** , 77-103.

32. Gelfand, A. E. and Sahu, S. K. (2009) Combining Monitoring Data and Computer model Output in Assessing Environmental Exposure. In *Handbook of Applied Bayesian Analysis* edited by Anthony O'Hagan and Mike West, pp 482-510.

31. Sahu, S. K. and Chai, H. S. (2009) A new skew-elliptical distribution and its properties. *Calcutta Statistical Association Bulletin*, **61**, 197–225.

30. Sahu, S. K.,Yip, S. and Holland, D. M. (2009) Improved space-time forecasting of next day ozone concentrations in the eastern U.S. *Atmospheric Environment*, **43**, 494-501.

29. Sahu, S. K. and Nicolis, O. (2008) An evaluation of European air pollution regulations for particulate matter monitored from a heterogeneous network. *Environmetrics*, **20**, 943–961.

28. Sahu, S. K. and Challenor, P. (2008) A space-time model for joint modeling of ocean temperature and salinity levels as measured by Argo floats. *Environmetrics*, **19**, 509–528.

27. Sahu, S. K.,Gelfand, A. E. and Holland, D. M. (2007) High Resolution Space-Time Ozone Modeling for Assessing Trends. *Journal of the American Statistical Association*. **102**, 1221-1234.

26. Jona Lasinio, G., Sahu, S. K. and Mardia, K. V. (2007) Modeling rainfall data using a Bayesian Kriged-Kalman model. In *Bayesian Statistics and its Applocations* edited by S. K. Upadhya, U. Singh and D. K. Dey. Anshan Ltd. London.

25. Sahu, S. K.,Gelfand, A. E. and Holland, D. M. (2006) Spatio-temporal modeling of fine particulate matter. *Journal of Agricultural, Biological, and Environmental Statistics.* **11**, 61-86.

24. Sahu, S. K. and Smith, T. M. F. (2006) A Bayesian method of sample size determination with practical applications *Journal of the Royal Statistical Society*, Series A, **169**, 235-253.

23. Sahu, S. K.,Jona Lasinio G., Orasi A., and Mardia, K.V. (2005). A Comparison of Spatio-Temporal Bayesian Models for Reconstruction of Rainfall Fields in a Cloud Seeding Experiment. *Journal of Mathematics and Statistics*, **1**, 273-281 ISSN: 1549-3644.

22. Sahu, S. K. and Mardia, K. V. (2005) Recent Trends in Modeling Spatio-Temporal Data. In Proceedings of the special meeting on Statistics and Environment organized by the Società Italiana di Statistica held in Università Di Messina, September 21-23, 2005, 69–83. Published by the Università Di Messina, Messina, Italy.

21. Sahu, S. K. and Mardia, K. V. (2005) A Bayesian Kriged-Kalman model for short-term forecasting of air pollution levels. *Journal of the Royal Statistical Society*, Series C, Applied Statistics, **54**, 223-244.

20. Sahu, S. K. and Dey, D. K. (2004) On a Bayesian multivariate survival models with a skewed frailty. In *Skew-Elliptical Distributions and Their Applications: A Journey Beyond Normality* edited by M. G. Genton. CRC/Chapman & Hall, Boca Raton, FL, pp. 321-338.

19. Sahu, S. K. (2004) Applications of formal model choice to archaeological chronology building. In *Tools for Constructing Chronologies: Crossing Disciplinary Boundaries* edited by Buck, C.E. and Millard, A. R. London: Springer-Verlag. pp 111–127.

18. Sahu, S. K. Dey, D. K. and Branco, M. D. (2003) A New Class of Multivariate Skew Distributions with Applications to Bayesian Regression Models. *The Canadian Journal of Statistics*, **31**, 129–150.

17. Sahu, S. K. and Zhigljavsky, A. A. (2003) Self Regenerative Markov Chain Monte Carlo with Adaptation. *Bernoulli*, **9**, 395-422.

16. Sahu, S. K. and Cheng, R.C.H. (2003) A Fast Distance Based Approach for Determining the Number of Components in Mixtures. *The Canadian Journal of Statistics*, **31**, 3–22.

15. Sahu, S. K. (2002) Bayesian Estimation and Model Choice in Item Response Models. *Journal of Statistical Computation and Simulation,* **72**, 217–232.

14. Roberts, G. O. and Sahu, S. K. (2001) Approximate pre-determined convergence properties of the Gibbs sampler. *Journal of Computational and Graphical Statistics,* **10**, 216–229.

13. Buck, C. E. and Sahu, S. K. (2000) Bayesian models for relative archaeological chronology building. *Journal of the Royal Statistical Society*, Series C– *Applied Statistics*, **49**, 423-440.

12. Sahu, S. K. and Dey, D. K. (2000) A Comparison of Frailty and Other Models for Bivariate Survival Data. *Lifetime Data Analysis*, **6**, 207-228.

11. Sahu, S. K. and Roberts, G. O. (1999) On Convergence of the EM Algorithm and the Gibbs Sampler. *Statistics and Computing*, **9**, 55–64.

10. Gelfand, A. E. and Sahu, S. K. (1999) Identifiability, improper priors, and Gibbs sampling for generalized linear models. *Journal of the American Statistical Association*, **94**, 247–253.

9. Gilks, W. R., Roberts, G. O. and Sahu, S. K. (1998) Adaptive Markov Chain Monte Carlo through Regeneration. *Journal of the American Statistical Association*, **93**, 1045–1054.

8. Roberts, G. O. and Sahu, S. K. (1997) Updating Schemes, Correlation Structure, Blocking and Parameterisation for the Gibbs Sampler. *Journal of the Royal Statistical Society*, B, **59**, 291–317.

7. Sahu, S. K.,Dey, D. K., Aslanidou, H. and Sinha, D. (1997) A Weibull Regression Model with Gamma Frailties for Multivariate Survival Data. *Lifetime Data Analysis*, **3**, 123–137.

6. Gelfand, A. E., Sahu, S. K. and Carlin, B. P. (1996) Efficient parametrizations for generalized linear mixed models, (with discussion). In *Bayesian Statistics 5* , J.M. Bernardo, J.O. Berger, A.P. Dawid and A.F.M. Smith, Oxford: Oxford University Press, pp. 165–180.

5. Gelfand, A. E., Sahu, S. K. and Carlin, B. P. (1995) Efficient parametrizations for normal linear mixed models. *Biometrika*, **82**, 479–488.

4. Dey, D. K., Kuo, L. and Sahu, S. K. (1995) A Bayesian Predictive Approach to Determining the Number of Components in a Mixture Distribution. *Statistics and Computing*, **5** , 297–305.

3. Gelfand, A. E. and Sahu, S. K. (1994) On Markov Chain Monte Carlo Acceleration. *Journal of Computational and Graphical Statistics*, **3**, 261–276.

2. Sahu, S. K.,Bendel, R. B. and Sison, C. P. (1993) Effect of Relative Risk and Cluster Configuration on the Power of the One-dimensional Scan Statistic. *Statistics in Medicine*, **12**, 1853–1865.

1. Mukhopadhyay, N., Chattopadhyay, S. and Sahu, S. K. (1993) Further Developments in Estimation of the Largest Mean of K Normal Populations. *Metrika*, **40**, 173–183.

Comments and Book Reviews:

12. Sahu, S. K. (2009) Comment on "A Moving Average Approach for Spatial Statistics Models of Stream Networks", by J. M. Ver Hoef and E. E. Peterson. *Journal of the American Statistical Association*, **105**, 21-22.

11. Sahu, S. K. (2009) Comment on "Approximate Bayesian Inference for latent Gaussian models using integrated nested Laplace Approximations" by Rue, Martino and Chopin. *Journal of the Royal Statistical Society*, Series B, **71**, 358-359.

10. Sahu, S. K. (2009) Report on the spatial statistics meeting held in Southampton on June 19, 2009. *RSS News*, **37**, Number 2, pp 9.

9. Gelfand, A. E. and Sahu, S. K. (2005) Comment on “On Model Expansion, Model Contraction, Identifiability and Prior Information: Two Illustrative scenerios Involving Mis-measured Variables" by Paul Gustafson. *Statistical Science*, **20**, 130-131.

8. Sahu, S. K. and Mardia, K. V. (2004) Comment on "A conditional approachfor multivariatextreme values" by Heffernan, J. E. and Tawn, J. A. *Journal of the Royal Statistical Society*, Series B, **66**, 536.

7. Sahu, S. K. (2002) Comment on "Bayesian measures of model complexity and fit" by Spiegelhalter, D., Best, Carlin and van der Linde. *Journal of the Royal Statistical Society*, Series B, **64**, 625-626.

6. Sahu, S. K. (2002) Review of the book Analysis of Multivariate Survival Data by P. Hougaard. *Biometrics*, **58**, 259.

5. Sahu, S. K. (2001) Review of the book Monte Carlo Methods in Bayesian Computation by Chen, M.-H., Shao, Q.-M. and Ibrahim, J. G. *Biometrics*, **57**, 326.

4. Sahu, S. K. (2000) Comment on "Time series analysis of non-Gaussian observations based on state space models from both classical and Bayesian perspectives" by Durbin, J and Koopman, S. J. *Journal of the Royal Statistical Society*, Series B, **62**, 35-36.

3. Roberts, G. O. and Sahu, S. K. (1997) Comment on The EM Algorithm–An Old Folk-Song Sung to a Fast New Tune by Meng, X.-L. and van Dyk, D. *Journal of the Royal Statistical Society*, Series B, **59**, 558–559.

2. Sahu, S. K. and Gelfand A. E. (1996) Comment on Convergence of Markov Chain Monte Carlo Algorithms. In *Bayesian Statistics 5* edited by J.M. Bernardo, J.O. Berger, A.P. Dawid and A.F.M. Smith, Oxford: Oxford University Press, pp. 316–317.

1. Roberts, G. O., Sahu, S. K. and Gilks, W. R. (1995) Comment on Bayesian Computation and Stochastic Systems. Statistical Science, **10**, 49-51.

GRANTS AND TRAVEL FUNDS

Grants:

Funding body & Dates	Value & Title	Remarks
WHO & 2019-2020	**US$100,000** Novel Bayesian Time Series Regression Methods For Estimating National Immunization Coverage.	This is a joint project with Dr Chigozie Edson Utazi in Geography and Environment.
Gates Foundation & 2014-2016	**US$341,309** Sentinel Epidemiology and Etiology Data (SEED) Representativeness and Mapping This is a joint project with Dr Andrew Tatem and Prof Peter Atkinson in Geography and Environment in the University.	The main aim of this project is to provide an evidence-based rationale for selecting sites into the (SEED) network primary data collection network by determining the socio-ecological signature and clustering of potential surveillance sites and the representative populations that are covered.
EPSRC & 2013-2016	**£365,643** A rigorous statistical framework for estimating the long-term health effects of air pollution	I am the sole investigator on this grant awarded to Southampton and it relates to a partner grant **£269,755** held by Glasgow University.
NERC & 2012-2015	**£475,583** Quantifying annual cycles of macronutrient fluxes and net effect of transformations in an estuary: their responses to stochastic storm-driven events.	As a CI, I led the statistical modelling arm in this multi-disciplinary multi-university consortium grant totalling about **a million pounds**. This enabled me to hire a statistics post-doc for a year.
EPSRC & 2010-2012	**£341,363** MetSim: a Hospital Simulation Support Tool Using Meteorological Information to Improve the Planning and Management of Health Services	I led the statistical modelling arm in this joint grant with Cardiff University. We have developed a statistical model for forecasting hospital demand that is currently being piloted for six hospitals in the UK.
EPSRC & 2005	**£4,507** Recent advances in modelling spatio-temporal data	This grant, obtained jointly with Prof Susan Lewis, enabled me to organise a research workshop in Southampton.
EPSRC & 2005-2010	**£415,486** PLATFORM: End-to-End pipeline for chemical information: from the laboratory to literature and back again	I am a CI who led the statistical modelling arm in this multi-disciplinary grant.

Travel and Sabbatical Funding:

Funding Body & Dates	Value & Purpose
SAMSI, 2013	US$**2,000** To participate in a SAMSI-SAVI US-India workshop on environmental statistics. I gave an invited talk.
Australian National University, 2011	AUS$**8,000** To establish research collaboration. This funding also allowed me to give a 3-day shor-course on Bayesian methods for spatial and spatio-temporal data.
Duke University, 2011	US$**3,000** To continue research collaboration. This funding also allowed me to give 3 invited talks in the USA.
The National Academies, 2007	US$**45,000** To model large space-time data. This funding allowed me to become a resident Senior Research Fellow at the US Environmental protection Agency offices in Research Triangle Park, North Carolina.
US Environmental protection Agency, 2005-2006	US$**45,000** To model and forecast ozone levels in the Eastern USA. This funding allowed me to develop methods and software for real time forecasting of ozone levels.
Universities of Rome and Bergamo, 2004-2005	EUR**5,000** To work with Prof Giovanna Jona Lasinio and Prof A. Fasso for Tthree weeks.
SAMSI, 2003	US$**11,500** To participate in a SAMSI environmental statistics programme. This funding allowed me to visit SAMSI for 6 months that initiated collaboration with Prof Alan Gelfand (Duke University) and Dr David Holland, US Environmental Protection Agency.
The Royal Society, 1999	**£600** To give an invited talk at the Joint Statistical Meetings held in Baltimore in 1999.
Other Forms of Funding	
Funding Body & Dates	Value & Remarks
Forest Research and the Scottish Forestry Commission, 2019	**£34,000** for a PhD Studentship to work under my joint supervision.
Commonwealth Scholarship Commission, 2018	**£25,000** awarded to Dr Sourish Das (Chennai Mathematical Institute, India) to work under my supervision for a year.
British Academy, 2017	**£10,000** Neighbourhood air pollution, inflammation and psychological distress. This was jointly awarded to Midouhas, Flouri (UCL) and Sahu.
University of Exeter, 2015	**£5,000** Air pollution modelling.
University of Southampton, 2011	**£21,000** I won this from a university-wide competition and it partially funded a PhD Studentship for 3 years.
University of Southampton, 2008	**£75,000** I won this from a university-wide competition and it funded an overseas studentship for 3 years.
University of Southampton, 2008	**£75,000** This funding was obtained jointly with Dr Andrew Chipperfield in Engineering.
Dorothy Hodgkin Trust, 2005	**£75,000** This grant was administered by the University of Southampton and obtained jointly with Peter Challenor.
The Royal Statistical Society, 2005	**£1,200** To jointly organise a research workshop in Southampton that was participated by 60 researchers from 10 different countries.
Ordnance Survey, 2005	**£500** To organise the above research workshop in Southampton.

POST-DOC AND STUDENT SUPERVISION

Post-doc Supervision:

5. Dr C. Edson Utazi (09/2013-08/2015) worked on the 2-year Gates Foundation project joint with Geography and Environment in the University.
4. Dr Monica Pirani (09/2013-08/2014) worked under my supervision on the 1-year NERC funded Macronutrients project.
3. Dr Sabyasachi Mukhopadhyay (01/2013-09/2015), worked under my supervision on the 3-year EPSRC funded project investigating the effect of air pollution on health.
2. Dr Bernard Baffour (02/2010-04/2012), post-doctoral fellow: Bernard worked on the EPSRC funded project: Metsim A Hospital Simulation Support Tool. At the end of the grant he joined as a research Fellow in Social Statistics, Institute for Social Science Research, The University of Queensland, Australia.
1. Dr Alexander Dolya (03/2007-12/2009), post-doctoral research mobility fellow, jointly supervised by me and Prof Susan Lewis. Alex moved onto a post-doctoral job at the National Oceanography Centre, Southampton.

Supervision of Long Term Academic Visitors:

3. Dr Sourish Das, funded by a year-long Commonwealth-Rutherford Scholarship, is currently working under my supervision on a machine learning and big data project.
2. Dr SangHoo Yoon, Chonnam National University, South Korea. 2012-2013. He worked on Modelling South Korean air pollution data, under my supervision during his year-long funded sabbatical leave from his unversity.
1. Dr Norhashidah Awang, Universiti Sains, Penang, Malayasia. She worked on forecasting for large space-time data under my supervision during 12 months in 2010-2011.

Current PhD Students:

1. Philip Wells: A spatial statistical modelling project for optimising the estimation of the environmental impact of urban forests.
2. Theo Chan: Novel Bayesian Time Series Regression Methods For Estimating National Immunization Coverage.
3. Mark Taylor Anisotropic modelling of Argo float data.

Past PhD Students:

10. Sthaporn Thepsumritporn: Bayesian Multivariate Normal Modelling. *Post PhD position:* Lecturer.
9. Matthew Hammond (2018, Joint supervisors: Dr Claudie Beaulieu and Dr Stephanie Henson). Assessing trends and uncertainties in satellite-era ocean chlorophyll using space-time modelling. *Post PhD position:* Research Associate at the School of Ocean and Earth Sciences, University of Southampton.
8. Mark Bass. (2015) Efficient parameterisation for modelling point reference spatial data. *Post PhD position: Scientist at Barclays Capital*

7. Maria Adamou (2014, Joint supervisors: Profs Susan Lewis and Dave Woods.) Bayesian design for spatial and spatio-temporal data. *Post PhD position:* Research associate at the Southampton Statistical Sciences Research Institute.

6. Sean Michael Ewings (2013) (Joint supervisor: Dr Andrew Chipperfield): Modelling Blood Glucose Levels in Type I Diabetes Patients. He won a very competitive Mathematics Research Fellowship from the School of Mathematics to pursue a 4th year of study. *Post PhD position:* Senior research associate at the Southampton Statistical Sciences Research Institute.

5. Khandoker Shuvo Bakar (2012). Modelling Daily Ozone Concentration Levels.*Post PhD position:* Research scientist at the CSIRO, Mathematics, Information and Statistics and the Centre for Mathematics and its Applications at the Australian National University, Canberra.

4. Jeffrey Joseph Samuel (2011) Empirical Models for Cyclic Voltammogram. *Post PhD position:* Lecturer, Alton College, UK.

3. Chun Yin Yip (2010) Bayesian Spatio-temporal modelling for forecasting ground level ozone concentration levels. *Post PhD position:* Tenure track assistant professor, Hong Kong Polytechnic University.

2. Daphne Kounali (2006) (Joint supervisor: Dr Clive Osmond): Early growth and coronary heart disease. *Post PhD position:* Post-doctoral researcher, Bristol Heart Institute, UK.

1. High Seng Chai (2004) A new skew elliptical distribution. *Post PhD position:* Post-doctoral researcher, Mayo Clinic, USA.

Past MSc Students:

45. Yanzhao Zhao (2021-2022) Bayesian Model for Spatial and Spatio-temporal Modeling of Covid-19 mortality in England

44. Yanran Wu (2021-2022) Bayesian Spatio-temporal Modelling on Child Poverty in London.

43. Yuan Song(2021-2022) Using Bayesian Methods in Spatial-temporal Modelling for Effluent Content Data of China

43. Yiwei Liu (2021-2022) Spatio-temporal Analysis of Air Quality in Beijing, China

42. Qiangqiang Zhu(2021-2022) Bayesian Spatio-temporal Modelling on COVID-19 Case and Death Rates in England

41. Md Sifat Ar Salan (2020-2021) A Hierarchical Bayesian Spatio-temporal Modelling to Analyze the COVID-19 Cases of Bangladesh.

40. Josphine Dahne (2020-2021) Bayesian Modelling of Spatio Temporal temperature data in Aragon, Spain

39. Xiyue Wang (2020-2021)Study and prediction of temperature and salinity in different layers of the ocean using Argo data.

38. Wenyu Sun(2020-2021) Bayesian Methods for Spatial and Spatio-temporal Modelling of child poverty in London

37. Qiuying Mao (2020-2021) Bayesian Methods for Spatial and Spatio-temporal Modelling of Covid-19 Cases in Local Authorities of England in 20 Weeks

36. Witaya Bamrungpong (2019-2020) Bayesian spatio-temporal modelling and validation for air pollution data from Piemonte, Italy. **He was awarded the top prize from Boeing for 19/20 CORMSIS MSc Maths OR students.**

35. Binbin Wang (2019-2020) Bayesian modelling and prediction of PM10 in Italy
34. Rattanawadee Tekavong (2019-2020) Bayesian modelling for particulate matter in Piemonte, Italy.
33. Yunning Lei (2019-2020) Bayesian modelling and analysis of pm10 in Italy.
32. Zhuoran Wu (2019-2020) Bayesian modelling of spatio-temporal data and analysis of daily amount of PM10 in Piemonte.
31. Jiahao Xu (2019-2020) Bayesian modelling and analysis of PM10 data at Piemonte.
30. Theo Chan (2018-2019) Modelling Childhood Measles Vaccination Coverage in India.
29. Farah Roslan (2018-2019) Hierarchical Bayesian Spatio-temporal modelling on Rainfall data.
28. Nian Tang (2017-2018) Machine learning methods for Bejing air pollution data.
27. Zhoui Shen (2017-2018) Estimation of number of trees in a city.
26. Xiaoqing Chen (2016-2017) On estimation of areal aggregates from point level Bayesian hierarchical spatial modelling
25. Ye Huang (2016-2017) A Bayesian item response model to analyse an international disability suvey data
24. Xueru Li (2016-2017) Aggregating air pollution estimates for England and Wales
23. Jinwu Cai (2014-2015) Space-time modelling and forecasting for air pollution data.
22. Richard Culliford (2013-2014) Application of Temporal-Spatial Modelling with the Estimation of Chlorophyll Concentration.
21. Sthaporn Thepsumritporn (2013-2014) Preliminary Analysis and Modelling of Nutrient Data Sets from the Christchurch Harbour.
20. Hanlu Chen (2012-2013). Modelling and prediction of hospital length of stay.
19. Zhongmin Jin (2012-2013). Motor Insurance and Risk of Accidents.
18. Khadija Gasimova (2011-2012). Insurance Regulations and Solvency II.
17. Ermioni Papadopoulou (2010-2011). Modelling and prediction of hospital length of stay.
16. Samuel Dumble (2009-2010) Analysis of objective polysomnography and subjective sleep measurements in insomnia patients
15. Muhamad Mahmod Hussen (2008-2009) Skew Normal Regression Models.
14. Colin Everett (2008-2009) Analysing School of Mathematics Admissions Data
13. Philip Prah (2008-2009) Analysing School of Mathematics Admissions Data
12. Alexander N. Dolia (2007-2008) Bayesian and Maximum Likelihood Methods for Fitting Space-time Hierarchical Models.
11. Yuliana Yakouskaya (2007-2008) A Bayesian Method for Updating Hourly Ozone Maps in the eastern U.S.
10. Jonathan Davey (2007-2008) Estimating the Difference in Mean Health-care Resource Usage in the Presence of Excess Zeros.
9. Kara Stevens (2005-2006) Investigation of Missing DNA Status in the Analysis of Cognitive and Physical Ability by Apoe Genotype.

8. Mehera Kidston (2004-2005) Spatio-temporal modeling of ocean temperature and salinity
7. William Neil Paget (2003-2004) Ozone Pollution in Illinois, Indiana and Ohio
6. Chun Wah Sung (2003-2004): A comparison of Two Approaches for Bayesian Sample Size Determination.
5. Michelle Eggers (2001-2002) Statistical Modelling of Self-Reported Health State of Individuals in Selected Countries.
4. Abraham Brown (2001-2002) Effect of calcium metabolism following thyroidectomy.
3. Katy Hoad (1999-2000) Assessing the Performance of Monte Carlo Methods.
2. Mark L. Haynes (1999-2000) Do Women Earn Less Than Their Male Colleagues?
1. MNicola E. Fernandes (1999-2000) Investigating Discrimination in Medical School Admissions.

Supervision of Undergraduate Students:

11. Xiang Qian Bayesian Methods for Spatio-temporal Modelling of Covid Deaths in Local Authorities of England from April, 2020 to January, 2022.
10. Laura Scala Bayesian modelling of English pandemic data.
9. Melody August Bayesian modelling of air pollution data.
8. Tyler Ackerman Bayesian regression modelling.
7. Tracy Fernandez Bayesian modelling of air pollution data.
6. Jinran Zhan (2019) Bayesian spatio-temporal modelling for precipitation volume with an application to Hubbard Brook Ecosystem Study. **She was awarded the best student prize in statistics.**

   Supervised dissertations of the Following BSc. Students in Cardiff.

5. Lydia Darby (1999) Statistics Modules in Cardiff using S-Plus.
4. Sarah Job (1999) Statistical analysis of contingency using S-Plus.
3. Anna Jones (1999) Analysis of Parkinsonian Data.
2. Y. Ng (1998) The perceived future of the Welsh language.
1. R. Ahmed (1997) On fitting generalized linear models using Glim.

CONFERENCE PRESENTATIONS AND PARTICIPATIONS

Invited Talks and Discussions:

- August 2019. Invited discussant and session organiser in the ISI meeting during August 18-23 in Kuala Lumpur, Malaysia.
- November 2017. Keynote speaker in the Second Bilbao data science workshop organised by BCAM-Basque Center for Applied Mathematics, Mazarredo 14, Bilbao, Basque Country, Spain.
- July 2017. Invited talk at the ISI meeting in Marrakech, Morocco.
- July 2016. Keynote speaker in 31st International Workshop on Statistical Modelling held in Rennes, France during July 4-8, 2016. https://www.lebesgue.fr/content/sem2016-iwsm2016-dates
- February 2016 Invited talk at the 13th Brazilian Meeting on Bayesian Statistics.
- July 2015. Invited talk at the ISI meeting in Rio de Janerio.
- June 2015 Invited talk at the Spatial Statistics Conference in Avignon, France.
- April 2015 Invited talk at the New England Statistics Symposium, Storrs, Connecticut
- August 2013. Invited discussant for a spatio-temporal modelling session in 59th World Statistics Congress held in Hong Kong.
- March 2013. Gave an invited talk at the SAMSI-SAVI workshop in SAMSI, Research Triangle Park, North Carolina, USA.
- January 2012. Invited paper at the 22nd annual conference of The International Environmetrics Society (TIES) in Hyderabad, India.
- December 2011. Invited paper at a discussion session in the meeting organised by the International Society for Business and Industrial Statistics, a wing of the International Statistical Institute, (ISI) held in Cochin, India.
- August 2011. Invited talk at the Design of Experiments Meetings in 2011 at the Newton Institute, Cambridge, UK.
- August 2011. Invited talk at ISI 2011 meetings at Dublin, Ireland.
- May 2011. Invited talk at the second symposium on Games and Decisions in Reliability and Risk, Beligerate, Italy.
- January 2010. Invited talk at the International Conferences in Probability and Statistics, Vishakhapatnam.
- December 2009. Invited talk at the Triennial Statistics Symposium organised by the University of Calcutta, India.
- August 2009. Invited talk at the ISI 2009 meetings at Durban, South Africa.
- March 2009. Invited talk at the EPSRC Workshop on Markov Chain Monte Carlo, Warwick.
- September 2008. Invited talk at the meeting on computational aspects of Spatial Statistics organised by the Section on Computational Statistics of the RSS.
- May 2008. Invited talk at the sixth French-Danish Workshop on Spatial Statistics at Toulouse, France.

- January 2008. Invited talk at the Platinum Jubilee conference of the Indian Statistical Institute, Kolkata, India.
- January 2007. Invited talk at the International Indian Statistical Association (IISA) meeting in Cochin.
- December 2006. Presented a paper at the Multivariate Statistical Methods in the 21st Century: The Legacy of Prof. S.N. Roy held at the Indian Statistical Institute, Calcutta.
- December 2006. Invited talk at the Sixth International Triennial Calcutta Symposium.
- September 2005. Two invited talks at the annual conference organised by the Italian Statistical Society.
- January 2005. Presented an invited discussion and a poster at the AdaptiSki and MCMCski conference held in Bormio, Italy.
- December 2004. Presented an invited talk at the international conference on future of statistical theory and practice in Hyderabad, India.
- July 2004. Invited talk at the 23rd Leeds statistics Colloquium, Leeds UK.
- March 2004. Invited talk at the advanced workshop on Spatial-Temporal models and methods held in Lisbon, Portugal.
- June 2003. Invited talk in the 7th Purdue Statistics Symposium organised by Purdue University.
- June 2003. Presented an invited paper in the Stochastic Computation Workshop held in Research Triangle Park, North Carolina.
- April 2002. Gave an invited to talk at the workshop: Tools for Constructing Chronologies: crossing disciplinary boundaries, held in Gregynog Hall, Wales, UK.
- March 2001. Invited talk at the 47th Biometrics Colloquium of the German region of the International Biometrics Society held in Homburg, March, 2001.
- August 2000. Presented an invited series of lectures on MCMC in Compstat in Utrecht.
- August 1999. Presented an invited paper in the Joint Statistical Meetings in Baltimore.
- December 1997. Presented an invited paper in the *3rd International Triennial Calcutta Symposium* on Probability and Statistics held in the Department of Statistics, University of Calcutta.

Contributed Talks:

- June, 2022. Presented a poster at the meeting organised by the International Society for Bayesian Analysis in Montreal, Canada.
- July 2017. Gave a talk at the 32nd International Workshop on Statistical Modelling in Groningen, Netherlands.
- April 2013. Gave a talk at the 2013 Annual UK Review Meeting on Outdoor and Indoor Air Pollution Research which will be held on 23-24 April 2013 at Cranfield University, UK.
- August 2012. Presented a special contributed paper at the Joint Statistical Meetings in San Diego, California.
- June 2010. Attended Valencia Meetings in Bayesian Statistics, Benidorm (Spain).

- August 2007. Presented a paper at the Joint Statistical Meeting in Salt Lake City.
- August 2003. Presented a paper in the Joint Statistical Meetings in San Francisco.
- June 2002. Presented a selected special contributed paper at the 7th Valencia International Meetings on B
- June 2001. Presented at the Second Workshop on Bayesian Inference in Stochastic Processes in Varenna (LC), Italy.
- September 2000. Presented a paper at the Spatial and Computational Statistics Network meeting held in Ambleside, UK.
- September 2000. Presented a paper at the Annual Royal Statistical Society meeting meeting held in Reading, UK.
- June 1998. Presented at the 6th Valencia conference on Bayesian Statistics.
- August 1996. Presented a paper at the Joint Statistical Meetings in Chicago.
- July 1996. Presented a paper and discussion in the AMS-IMS-SIAM Summer research workshop at the Mount Holyoke College, Massachusetts.
- May 1996. Presented a paper at the *European Science Foundation* conference in Rebild, Denmark.
- June 1995. Presented a paper at the conference on *Highly Structured Stochastic Systems* held in Luminy, France.
- August 1993. Presented a paper in the Joint Statistical Meetings in San Francisco.
- July 1992. Presented a paper at the Workshop on Statistics & Computing in Disease Clustering held in Long Island, New York.

Departmental Presentations:

- **Within UK** Queen Mary University of London (2019), University of Essex (2019), Leeds University (2018), Royal Statistical Society (London) (2017), Open University (August 2011), Glasgow (Dec 2010), Warwick (Jun 2010), Bristol (December 2009), Birmingham (November 2009), Kent (April 2009), Bath (May 2002), Nottingham (November 2001), Kent (October 2001), Sheffield (March 2001), Leeds (November 2000), Oxford (June, 2000), Southampton (May 2000 and June 1999), University of Wales Statistics Colloquium, Gregynog (September 1998 and 1997), Lancaster (July 1997), Bristol (April 1997), Newcastle upon Tyne (June 1996), University Manchester (November, 1995)
- **Overseas** University of Wollongong (November 2011), National University of Singapore (October 2011), Duke University (September 2011), University of South Carolina (September 2011), North Carolina State University (September 2011), Indian Statistical Institute, Kolkata, (Aug 2008), Indian Institute of technology, Mumbai, (July 2008), Texas A&M University (November 2007), National Institute of Environmental Health Sciences (September 2007), University of Georgia, Atlanta (September 2007), North Carolina State University, Raleigh (April 2007). Duke University (April 2003), University of Rome (September 2004), University of Bergamo, Italy (September 2005), Indian Statistical Institute, Calcutta (September 1994).

TEACHING INFORMATION

University of Southampton (1999-Present):

- *Math1024: Introduction to Probability and Statistics*, since 2018. I volunteered to teach this large first year module taken by about 200 students. I completely overhauled the module and developed a course booklet of 160 pages. This has been a major change with many novel features such as an in-class fun data gathering experiment. Although there were some criticisms from few weaker ones, students expressed a lot of enthusiasms and and expressed their appreciation. Here is a selection of their comments.
  - I really enjoy how everything is fully explained and most things are proved. It really helps make the subject, that I hated in A levels, really enjoyable because I really understand what is happening.
  - The prof of this module tries his best to make this module interesting to us students and his jokes are the best feature of the module.
  - Booklet is awesome! Thorough lecture notes. Worked examples in notes. The module booklet is very good and I enjoy using R. Lecture notes split by lectures. Easy to follow. The best features are the examples.
  - Lots of other interesting info given in lectures & on blackboard. I attend every lecture. I love probability and all the calculation parts of stats. Attend lectures to gain insight beyond booklet contents. Goes on nicely from A level knowledge. Clear and helpful lecture notes. I learn that the probability that happening in real life.
  - This module is easy and Sujit is very enthusiastic about his work. I also like the lecturer's enthusiasm. Never studied stats before but I like Prof Sahu's enthusiasm. Papa Sujit's enthusiasm. #Papa Sujit For Life. It can't be improved further. Its awesome!
  - Even dry material is delivered well. Lecturer is funny/entertaining. It can't be improved further. Its awesome! Sujit is very passionate about the subject.
  - Enjoyed learning R. Using R. R was quite fun to learn. Rstudio is fine. I enjoy the R software package the most. Also I enjoy learning the R programme. R is fun to use. Initially found R very challenging, but the R classes helped me get an understanding.
- *Math6153: Statistical Theory and Linear Models*, three times. I revised this module to include linear models and an introduction to Bayesian methods. In 2016 I received a median rating of 5 out of 5. Here are some example comments from the student questionnaires:
  - I used to use statistical software's with out really understand the basic theory behind them. This course gave me the good basic view of what is going on.
  - I enjoy the picture and example given in lectures, which are really helpful for us to understand the concepts of statistical theory.
  - I enjoyed the wide range of subject areas covered, and that the module progressed at a good pace. Handing in written exercises was very beneficial in helping to understand the content. Sujit is a very engaging and experienced lecturer - I felt comfortable in his lectures and rarely lost or confused. I like that he wrote a lot on the blackboard as this was easier to follow than just reading from the notes projected on the screen. Printed notes very useful. Lots of exercises to practice.
  - Prof Sahu is great at explaining the content and he uses the board often to show derivations, which is great. I thoroughly enjoyed his module and can't wait for Bayesian statistics in Semester 2.
  - I particularly liked Sujit's way of interacting and simplifying things.
  - Everything is good.

  - Reduce the amount of material. We rushed through most of the material and I now feel I am completely unprepared for the exam.
  - I don't think it's the lecturers fault, but the amount of material that we had to go through every week was quite a lot. Therefore I do not understand a lot of concepts very well.
  - It's a very theory heavy module, so it can a be a bit dry and a bit abstract.

- *Math6025: Bayesian Methods*. 6 times. I am currently teaching this course. In the past I have revised this module to a practical Bayesian modelling course where each student is required to do a Bayesian modelling project.This has been very well received by the students. Level of students: MSc in Statistics and MSc in Statistics with Applications in Medicine. Typical number of students 10-20.

- *Math6022: Univariate Theory and Inference*, two times. Level of students: MSc in Statistics with Applications in Medicine. Typical number of students 10-20. I have taken on this course for the first time in 2012. Student feedback has been very positive with some very encouraging remarks and an overall mean rating of 4.3 out of 5. In 2013 this has improved to 4.5 out of 5.

- *Math3032: Communicating and Researching in Mathematics*, thrice. Level of students: third year undergraduate students in mathematics. I supervise the statistics group and individual projects for 50 undergraduate students. I have taken on this course for the first time in 2012 and my advice, feedback and interactions have been liked by the students as is evident from the *highest ratings* they have given me among the four module coordinators: Applied, Pure, Statistics and Operations Research.

- *Math3012: Statistical Methods II*, eight times. Level of students: third year undergraduate students in mathematics. Typical number of students 15-30. I have introduced a final examination component carrying 50% of the overall assessment.

- *Math2010: Statistical Methods I*, six times. Level of students: second year undergraduate students in mathematics. Number of students increased from 80 to 180 over the years. Here also I have introduced a final examination component carrying 80% of the overall assessment.

- *Math6030: Statistical Computing*, six times. Level of students: MSc in Statistics with Applications in Medicine. Typical number of students 20-30. I have introduced this course where the primary aim is to teach data manipulation and programming in R and Splus.

- *MA676: Bayesian Methods*, three times. Level of students: MSc in Statistics with Applications in Medicine. Typical number of students 5-10.

- *Math2041 and Math2042: Statistics for Civil and Environmental Engineers*, three times. Level of students: second year undergraduate students in Engineering. Number of students: 65-80.

- *MA322: Advanced Statistical Methods*, once. Level of students: third year undergraduate students in mathematics. Number of students: 4. I have developed this module to teach Bayesian inference and related Markov chain Monte Carlo methods using Splus and the Gibbs sampling software BUGS.

- *MA181: Introduction to Statistical Modelling*, once. Level of students: first year students majoring in Economics with Actuarial Studies and post-graduate students in Certificate in Statistics. Number of students: 16.

- *MA221: Statistical Distribution Theory*, twice. Level of students: Second year undergraduate students in mathematics. Number of students: 60-80.

- *MA1024: Introduction to Statistics and Probability*, tutored four times. Level of students: first year undergraduate students in mathematics. Number of students: 25-30.
- *MA1C1: Calculus with Maple*, tutored twice. Level of students: first year undergraduate students in mathematics. Number of students: 25-30.

Cardiff University (1997-1999):

- *MA0251: Distribution Theory*, twice. Level of students: second year undergraduate students in mathematics. Number of students 78.
- *MA0258: Statistical Inference II*, three times. Level of students: second year undergraduate students in mathematics. Number of students: 70.
- *MA0365: Computational Statistics*, twice. Level of students: third year undergraduate students in mathematics. I introduced this course whose syllabus included generalized linear models, Bayesian Inference and and Monte Carlo inference. Number of students 35.

University of Cambridge (1994-1997):

- *Bayesian Data Analysis*. Level of Students: Postgraduate diploma students in the Statistical Laboratory in Cambridge University. Number of students: 10.
- Provided tutorials to students from various Cambridge colleges on the two courses *Statistical Inference* and *Computational Statistics and Statistical Modelling*.

University of Connecticut (1990-1994):

- In addition to regular teaching assistant duties, I taught the summer course *A First Course in Mathematical Statistics* during July-August, 1993.

Enterprise Research Led Short-course Teaching:

- I have successfully delivered enterprise short coures in Statistical Machine Learning, Big Data, Bayesian Modelling, and introduction to MCMC methods jointly with international visitors: (i) Dr Sourish Das (Chennai Mathematical Institute, India), (ii) Prof Dipak Dey (University of Connecticut) and (iii) Prof Alan Gelfand (Duke University).
- Taught two courses (i) an introduction to Bayesian analysis and MCMC, and (ii) an introduction to Bayesian modelling of spatial and spatio-temporal data several times internationally in (i) Australia: CSIRO, Mathematics, Information and Statistics and the Australian National University, Canberra; (ii) Italy, University of Bologna, and (iii) Spain, University of Valencia.
- Starting in 2005, I have pro-actively managed, developed materials and lectured on an S3RI biennial intensive short-course in one of my research areas of hierarchical modelling for spatial and spatio-temporal data, jointly with Alan Gelfand (Duke University). This course attracts participants from academia, government agencies such as the Office for National Statistics, and industries including agriculture, fisheries, and pharmaceutical from many countries in the EU and North America.
- Taught the two courses again during April 9-12, 2013 jointly with Prof Alan Gelfand. Both the courses were very popular, more than 25 fee paying participants, and enthusiastically received, my overall rating is 4.53 out of 5.

SERVICES TO THE PROFESSION

Panel Membership:

- Served as a member of two large EPSRC Mathematics Prioritisation Panels in 2012 and 2017 discussing more than 80 proposals.
- Served as a member of the Environmental Statistics Section Committee of the RSS during 2011-2015.

Journal Editorship:

- Associate Editor of *Spatial Statistics*, since 2019. I also served as the managing editor of a special issue on 'Spatial Dynamics of Covid' for this journal.
- Associate Editor of the *Biometrical Journal*, 2015-2019.
- Associate Editor of the *Environmental and Ecological Statistics*, 2013-2015.
- Co-Editor of *Sankhya, the Indian Journal of Statistics*, 2012-2013.
- Associate Editor of the *Journal of the American Statistical Association* (Applications and Case Studies), 2008-2012.
- Associate Editor of the *Journal of the Royal Statistical Society*, Series C: Applied Statistics, 2003-2006.

External Examination:

- Served as the external examiner for the BSc (Hons) Mathematics with Statistics and BSc (Hons) Mathematics with Finance for the University of Mauritius during 2021-2022.
- Served as the external examiner for Part 3 in Statistics in the University of Oxford for 3 years 2015-2017.

PhD External Examination:

14. 2021, Bath University. Methods for preferentially sampled spatial data.
13. 2020, Newcastle University. Modelling Voxel Dependent Hemodynamic Response Function
12. 2019, University of Sheffield. Bayesian models for panel data with dynamic skewness.
11. 2018, University of Sheffield. Bayesian Inference for Dynamic Spatio-temporal Models.
10. 2017, Glasgow University. Nonparametric statistical downscaling for the fusion of in-lake and remote sensing data.
9. 2016, Lancaster University. Statistical Methods for Weather-related Insurance Claims.
8. 2015, University College London. Space-Time Statistical Downscaling of Air Quality Models
7. 2014, Open University. An alternative Bayesian dynamic approach to the STAR (Smooth Transition AR) models for nonlinear processes.
6. 2014, Lancaster University. Spatio-temporal modelling of partially observed data.
5. 2012, University of Kent at Canterbury. Contribution to the Bayesian Analysis of Mixture Models.
4. 2011, Bath University. Bayesian Spatio-temporal modelling of Air pollution.

3. 2008, University of Manchester. Markov Chain Monte Carlo Methods Applied to Integer-Valued Time Series.

2. 2006, Imperial College. Non-Stationary Spatial Statistics in the Geosciences.

1. 2006, Lancaster University. A Bayesian partitioning approach to modelling and mapping case control data.

PhD Internal Examination:

- Six times in the University of Southampton.

Conference and Workshop Organisation:

- Successfully organised, jointly with Dr Duncan Lee and the Royal Statistical Society, the one-day meeting in Investigating the effect of air quality on health on April 15, 2013 in Southampton. http://www.southampton.ac.uk/∼sks/onedaymeeting/
- Significant roles in organising the 2012 meeting of the International Environmetrics Society in Hyderabad, January 2-6, 2012.
  - Member of the International Scientific Committee.
  - Member of the cross-disciplinary panel of well established researchers, in a plenary session following president's invited talk by Prof Alan Gelfand.
  - Member of a committee of judges that selected the best student paper.
- Chaired the contributed paper session CPS053 in the ISI Meetings in Dublin, 2011.
- A one-day research meeting on Environmental and Spatial Statistics, Southampton, 2009.
- A two-day EPSRC funded international research workshop on Recent Advances in Spatio-Temporal Modelling, Southampton, 2005.
- Organiser of three sessions in the meetings organised by the International Indian Statistical Association in 2008 and 2011.
- Chaired a contributed paper session in the Joint Statistical Meetings (JSM) 2003.
- Organised an invited session in JSM 1999.

Reviewer Roles:

- Scientific reviewer for two reports written for the Office for National Statistics during 2006 and 2008.
- External adviser for the Bayesian methods for combining multiple Individual and Aggregate data Sources in observational studies (BIAS) Project, based at Imperial College, funded by ESRC, 2008-2011.
- Grant proposal reviewer for funding bodies in USA (National Science Foundation), Australia, Canada, Chile and New Zealand. I have also carried out a large amount of refereeing for all the main Statistics journals.

Consultancy:

- Bayesian sample size determination for the National Audit Office, 2002.
- Monitoring Equal Opportunity Audit for the Natural and Environmental Research Council, 2000.
- Monitoring equal opportunity in undergraduate admissions in the University of Wales, College of Medicine, 1999.

ADMINISTRATION

- 2022-present. Senior tutor for the MSC in Statistics.
- 2022-present: Ethics reviewer for the Faculty of Social Sciences.
- 2017-2020 I was the REF Impact champion for the Mathematical Sciences. In my role as the champion I have supervised the writing of 7 impact case studies for REF2021. Five of these submitted to the REF2021 exercise and all those have received very good ratings.
- 2013-2015 I was the examination officer for the MSc in Actuarial Science, MSc in Statistics with Applications in Medicine and MSc in Statistics.
- 2012-2015 I was the post-graduate research coordinator for the Statistics group in charge of recruting PhD students.
- 2012-2015: Member of the management board of the Southampton Statistical Sciences Research Institute (S3RI).
- 2009- Academic mentor for a junior colleague, Dr Robin Mitra in the statistics group.
- 1999–Present: Reviewed numerous University of Southampton Mathematics courses.
- 1999–Present: Internal examination moderator for various courses, typically one per semester.
- 1999–Present: Private tutor for many undergraduate and post-graduate students providing pastoral care.
- Feb-Sep, 2007: Year Tutor for first year mathematics undergraduate students.
- 2000-2006: Webmaster for the Statistics group, responsible for designing and publishing the web pages of the group.
- 2001-2005: Member of the Safety Committee.
- 2002-2003: Designated advisor for international students.
- 2001-2006: Member of the Database and Web Management Sub-committee.
- 2002-2003: Member of the Undergraduate Recruitment and Admissions Committee.
- 2000-2006: Member of the Computing Equipment Committee.
- 1999-2006: Seminar organiser for the inter-faculty seminars in Statistics.
- 1999-2000: Statistics Group representative for the IT in teaching working party.

STUDENT RECRUITMENT AND OUTREACH ACTIVITIES

- To recruit overseas students, since 2009, I have visited several colleges and universities in India including the Indian Institute of Technology, Mumbai and the Indian Statistical Institute, Kolkata. Interviews with the press in various cities have led to six articles about the University and the postgraduate Actuarial Science programmes. My efforts are devoted to attracting overseas students to Southampton not only in Mathematics but also in other disciplines by raising the University's profile in these important overseas markets.

STAFF DEVELOPMENT COURSES TAKEN

1. **2015**. Academic appraisal (half day)
2. **2015**. Recruiting PhD students (half day)
3. **2000**. New lecturers workshop (two days).
4. **2000**. A course on supervising research students.
5. **1998**. A course on Improving Student Learning.
6. **1997**. A course on Lecturing Skills (two days).

HONORS

- Cash Prize for good performance in M. Stat. (Indian Statistical Institute), 1989.
- P. C. Mahalanobis Book Prize for securing best results among all the students in B. Sc. (Statistics Honors), 1987.
- Gwalior Silver medal for securing best results among all the students in B. Sc. 1986.

COMPUTING SKILLS

- Extensive programming experience in C.
- Well versed in computer packages and languages: *R, WinBugs, Splus, & Minitab*.
- With PhD student Shuvo Bakar I have developed the contributed R-package `spTimer` for Bayesian modelling and analysis of spatio-temporal data.

MEMBERSHIP OF PROFESSIONAL AND LEARNED SOCIETIES

- Fellow of the Royal Statistical Society
- Member of the American Statistical Association
- Member of the Research Section Committee of the RSS 2017-2019.

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