

Curriculum Vitae

Name: Madhuchhanda Bhattacharjee (*nee* Mukhopadhyay)

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Education	<ol style="list-style-type: none">1. Researcher, Rolf Nevanlinna Institute, Helsinki, Finland, since February 2001.2. Ph. D. in statistics, University of Pune, Pune, India, 2000.3. M.Phil. in statistics, University of Pune, Pune, India, 1995.4. M.Stat., Indian Statistical Institute, Calcutta, India, 1991-1993.
Title of Ph.D. Thesis	Repairable Systems: Modelling and Some Inference Problems
Title of M.Phil. Dissertation	Statistical Inference for the Power-Law process: A Model for Repairable Systems
Research Papers/ Studies	See Annexure-I & II for selected lists of research papers and other studies
Areas of Special Interest	<p>Analytic development for: Modelling and analysis of heterogeneous data, Parametric and Non-Parametric Statistical Inference for Stochastic Processes.</p> <p>Application areas: Bioinformatics with emphasis to microarray data, Statistical Genetics, Reliability & Survival Analysis, Econometrics.</p>
Awards/ Honours	<ol style="list-style-type: none">1. Winner of Jan Tinbergen Award for the paper entitled "Inference for Non-homogeneous Poisson Processes: Models for Repairable Systems" submitted for the 2001 International Statistical Institute Competition for Young Statisticians from Developing Countries.2. Awarded First Prize in the Mathematical Sciences Group

	<p>(comprising Mathematics, Statistics and Computer Science faculty) at SUSAMVAD, the research students' seminar organised by the University of Pune on the occasion of Golden Jubilee of India's Independence, for a presentation on "<i>Non-Parametric Testing of Intensity Functions of Non-Homogeneous Poisson Processes</i>" 1998.</p> <ol style="list-style-type: none"> 3. Received 'Outstanding' grade from the examiner for the M.Phil. thesis titled "<i>Statistical Inference for the Power-Law Process : A Model for Repairable Systems</i>", 1995. 4. Prestigious Research Fellowship in Statistics from the National Board for Higher Mathematics, Department of Atomic Energy (DAE), Govt. of India, 1993 - 1996. 5. Was the Topper of the 1993 M.Stat. batch at the Indian Statistical Institute, in the specialisation <i>Applied Statistics and Data Analysis</i> (ASDA), 1993. 6. Received prizes for brilliant academic performance from the Indian Statistical Institute, December 1992 and June 1993.
<p>Visits</p>	<ol style="list-style-type: none"> 1. Institute of Statistical Mathematics, Tokyo, Japan, September 2001. 2. Rolf Nevanlinna Institute, University of Helsinki, Helsinki, Finland, November 2000.
<p>Experience</p>	<ol style="list-style-type: none"> 1. Working as Researcher at the Rolf Nevanlinna Institute, Helsinki, Finland, since February 2001. 2. On leave from the Reserve Bank of India, where has been working since September 1996. Presently hold the position of an Assistant Adviser in the <i>Department of Statistical Analysis and Computer Services</i>. 3. Research Fellow at the <i>Department of Statistics, University of Pune</i> (one of the few centres for advanced learning in Statistics in India) with a prestigious scholarship from the National Board for Higher Mathematics, 1993 - 1996 and again during 1998 - 1999 on leave from RBI. 4. Honorary Technical Advisor (Statistics Group) for Statconsulta (a statistical and software consultancy firm) during 1992 - 1993.

ANNEXURE-I
Selected Research Papers, Presentations and Projects

I. Refereed publications

- Unconditional Tests of Goodness-of-fit for The Intensity of Time Truncated Non-Homogeneous Poisson Processes (2004), to appear in Technometrics, with J.V. Deshpande and U.V. Naik-Nimbalkar.
- Modelling heterogeneity: Hierarchical Bayesian approach (2003), in Mathematical Reliability: An Expository Perspective, Ed: Mazzuchi, T.A., Singpurwalla, N.D. and Soyer, R., Kluwer academic publishers, with E. Arjas.
- Bayesian Characterization of Natural Variation in Gene Expression in Methods of Microarray Data Analysis III, Proceedings of the CAMDA02 Conference, Ed. Johnson K. and Lin, S., Kluwer Academic Publishers (accepted for publication), with C.C. Pritchard, M.J. Sillanpää and E. Arjas.
- Bayesian modelling of failure prediction using maintenance information (2003), in Safety and Reliability, Ed. Bedford, T. and van Gelden, P.H.A.J.M., Proceedings of ESREL 2003, A.A.Balkema Publishers/Swets & Zeitlinger, with E. Arjas.
- Bayesian Characterization of Natural Variation in Gene Expression (2002) Abstracts of papers for CAMDA02 Conference, Nov, Durham, USA, with M.J. Sillanpää and E. Arjas.
- Inference for Non-homogeneous Poisson Processes: Models for Repairable Systems, (2001), Proceedings of the International Statistical Institute, August, Seoul, Korea (**winning paper of Jan Tinbergen Award 2001**).
- Bayesian Nonparametric Estimation of Intensity functions using Markov Chain Monte Carlo Method, (2000), Calcutta Statistical Association Bulletin, 50, pp.223-235, with J. V. Deshpande and U. V. Naik-Nimbalkar.
- Economic Shocks and Relationship between Relative Price Variability and Inflation Rate in India during 90s, (2000), Indian Journal of Applied Economics, special issue in Honor of Prof. Paul A. Samuelson, 8, Part IV, 357-376, with G. P. Samanta.
- How Useful are Seasonal Adjustment and HP-Filter for Estimating Core Inflation in India? (2000), International Journal of Development Banking, 18, 2, 61-77, with G. P. Samanta.
- Testing of Two Sample Proportional Intensity Assumption for Non-homogeneous Poisson Processes, (1999), Journal of Statistical Planning and Inference, 81, pp.237-251, with J.V.Deshpande and U.V.Naik-Nimbalkar.

II. Articles in international compilation works, conference proceedings and presentations

- Bayesian Latent Class Modelling of Microarray Data (2003), Proceedings of the International Statistical Institute, August, Berlin, Germany, with Elja Arjas.
- Modelling Heterogeneity in Nuclear Power Plant Valve Failure Data (2003), in Mathematical and Statistical Methods in Reliability, Ed. Lindqvist, B. and Doksum, k., World Scientific Publishing Co., with E. Arjas and U. Pulkkinen.
- Bayesian approach to DNA microarray data analysis (2003), in Practical Course on Dna Microarray Technology, Viikki Graduate School in Biosciences, Dec 1-10, University of Helsinki, Finland (**invited presentation**).
- Bayesian Integrated Functional Analysis of Microarray Data (2003), MIR@W workshop on Bayesian Networks and Microarray analysis, October, Warwick University, UK (**invited presentation**).

- One step analysis of microarray data, Theme Conference of the Royal Statistical Society, Statistical Genetics and Bioinformatics, July 14-17, Diepenbeek, Belgium.
- Bayesian Integrated Modelling of Gene Expression Data, International Biometric Society, Nordic Regional Conference 2003, June 12- 14, Uppsala, Sweden **(invited presentation)**.
- Bayesian Characterization of Natural Variation in Gene Expression (2002), Critical Assessment of Microarray Data Analysis (CAMDA) Conference, Nov. 14-15, Durham, USA, **(invited presentation)**.
- A unifying approach to analyse microarray based gene expression data (2002), The 3rd Stockholm Workshop in Statistical Genetics, Sept. 12-14, Stockholm, Sweden.
- Modelling Heterogeneity in Nuclear Power Plant Valve Failure Data (2002), Third International Conference on Mathematical Methods in Reliability: Methodology and Practice, June 17-20, Norwegian University of Science and Technology, Trondheim, Norway.
- Bayesian analysis to gene expression data: A case study (2002), Mini-symposium on Computational Biology, June 5, Viikki Biocenter Research Organization, University of Helsinki, Helsinki, Finland **(invited presentation)**.
- Inference for Non-homogeneous Poisson Processes: Models for Repairable Systems, (2001), 53-rd session of the International Statistical Institute, August 22-29, Seoul, Korea, **(invited presentation)**.
- Inference for Repairable Systems with application to Exchange Rates, (2001), Department of Statistical Methodology, The Institute of Statistical Mathematics, Tokyo, Japan.
- Tests for Equality of Intensities of Failures of a Repairable System under Two Competing Risks, (2000), Recent Advances in Reliability Theory: Methodology, Practice and Inference, Ed. N. Limnios and M. Nikulin, Birkhäuser Boston, with J.V.Deshpande and U.V.Naik-Nimbalkar.
- Non-Parametric Testing of Intensity Functions of Non-Homogeneous Poisson Processes (1998), SUSAMVAD: The research students' seminar organised by the University of Pune on the occasion of Golden Jubilee of India's Independence, Pune, India, **(winning paper in the Mathematics, Statistics and Computer Sciences category)**.

III. Papers Submitted/ Work in progress:

- Bayesian Integrated Functional Analysis of Microarray Data, with C.C. Pritchard, P.S. Nelson, E. Arjas
- The molecular program of mouse prostate development: functional analysis with the help of GO, with researchers from Fred Hutchinson Cancer Research Centre, USA and Elja Arjas, RNI.
- To identify and compare concentration dependent effects of TCDD on gene expression in specific human cell lines, with researchers from the National Institute of Environmental Health Sciences, USA and Elja Arjas, RNI.
- Analysis of genes underlying symptomatic Carotid artery disease, with researchers from Neuroscience Program, Biomedicum Helsinki and Elja Arjas, RNI.
- Bayesian Analysis of Multilocus Association using WINBUGS, with Mikko J. Sillanpää, RNI.
- Modelling and analysis of bleeding pattern induced by cHRT, with Elja Arjas.

ANNEXURE-II

list of publications/presentation/projects

I. Articles in international scientific journals (refereed)

Unconditional Tests of Goodness-of-fit for The Intensity of Time Truncated Non-Homogeneous Poisson Processes(2003) , with J.V.Deshpande and U.V.Naik-Nimbalkar, to appear in Technometrics.

Testing of Two Sample Proportional Intensity Assumption for Non-homogeneous Poisson Processes, (1999), Journal of Statistical Planning and Inference, 81, pp.237-251, with J.V.Deshpande and U.V.Naik-Nimbalkar.

Bayesian Nonparametric Estimation of Intensity functions using Markov Chain Monte Carlo Method, (2000), Calcutta Statistical Association Bulletin, 50, pp.223-235, with J. V. Deshpande and U. V. Naik-Nimbalkar.

Economic Shocks and Relationship between Relative Price Variability and Inflation Rate in India during 90s, (2000), Indian Journal of Applied Economics, special issue in Honor of Prof. Paul A. Samuelson, 8, Part IV, 357-376, with G. P. Samanta.

How Useful are Seasonal Adjustment and HP-Filter for Estimating Core Inflation in India?, (2000), International Journal of Development Banking, 18, 2, 61-77, with G. P. Samanta.

II. Articles in international compilation works and in international scientific conference proceedings (refreed)

Bayesian Characterization of Natural Variation in Gene Expression in Methods of Microarray Data Analysis III, Proceedings of the CAMDA02 Conference, Ed. Johnson K. and Lin, S., Kluwer Academic Publishers (accepted for publication), with C.C. Pritchard, M.J. Sillanpää and E. Arjas.

Bayesian modelling of failure prediction using maintenance information, in Safety and Reliability, Ed. Bedford, T. and van Gelden, P.H.A.J.M., Proceedings of ESREL 2003, A.A.Balkema Publishers/Swets & Zeitlinger, with E. Arjas.

Bayesian Characterization of Natural Variation in Gene Expression (2002) Abstracts of papers for CAMDA02 Conference, Nov, Durham, USA, with M.J. Sillanpää and E. Arjas.

Modelling heterogeneity: Hierarchical Bayesian approach, in Mathematical Reliability: An Expository Perspective, Ed: Mazzuchi, T.A., Singpurwalla, N.D. and Soyer, R., Kluwer academic publishers (accepted for publication), with E. Arjas.

Inference for Non-homogeneous Poisson Processes: Models for Repairable Systems, (2001) Proceedings of the International Statistical Institute, August, Seoul, Korea (**winning paper of Jan Tinbergen Award 2001**).

III. Other international publications/conference presentations

Bayesian Latent Class Modelling of Microarray Data (2003), Proceedings of the International Statistical Institute, August, Berlin, Germany, with Elja Arjas.

Modelling Heterogeneity in Nuclear Power Plant Valve Failure Data (2003), in Mathematical and Statistical Methods in Reliability, Ed. Lindqvist, B. and Doksum, k., World Scientific Publishing Co., with E. Arjas and U. Pulkkinen.

Tests for Equality of Intensities of Failures of a Repairable System under Two Competing Risks, (2000), Recent Advances in Reliability Theory: Methodology, Practice and Inference, Ed. N. Limnios and M. Nikulin, Birkhäuser Boston, with J.V.Deshpande and U.V.Naik-Nimbalkar.

Bayesian approach to DNA microarray data analysis (2003), in Practical Course on Dna Microarray Technology, Viikki Graduate School in Biosciences, Dec 1-10, University of Helsinki, Finland (**invited presentation**).

Bayesian Integrated Functional Analysis of Microarray Data (2003), MIR@W workshop on Bayesian Networks and Microarray analysis, October, Warwick University, UK (**invited presentation**).

One step analysis of microarray data, Theme Conference of the Royal Statistical Society, Statistical Genetics and Bioinformatics, July 14-17, Diepenbeck, Belgium.

Bayesian Integrated Modelling of Gene Expression Data, International Biometric Society, Nordic Regional Conference 2003, June 12- 14, Uppsala, Sweden (**invited presentation**).

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A unifying approach to analyse microarray based gene expression data (2002), The 3rd Stockholm Workshop in Statistical Genetics, Sept. 12-14, Stockholm, Sweden.

Modelling Heterogeneity in Nuclear Power Plant Valve Failure Data (2002), Third International Conference on Mathematical Methods in Reliability: Methodology and Practice, June 17-20, Norwegian University of Science and Technology, Trondheim, Norway.

Bayesian analysis to gene expression data: A case study (2002), Mini-symposium on Computational Biology, June 5, Viikki Biocenter Research Organization, University of Helsinki, Helsinki, Finland (**invited presentation**).

Inference for Non-homogeneous Poisson Processes: Models for Repairable Systems, (2001), 53-rd session of the International Statistical Institute, August 22-29, Seoul, Korea, **(invited presentation)**.

Testing of Two Sample Proportional Intensity Assumption for Non-homogeneous Poisson Processes (1999), the National Conference on Reliability Analysis, Cochin University of Science and Technology, Cochin, India.

Non-Parametric Testing of Intensity Functions of Non-Homogeneous Poisson Processes (1998), SUSAMVAD: The research students' seminar organised by the University of Pune on the occasion of Golden Jubilee of India's Independence, Pune, India.

A Review and Comparison of Goodness-of-Fit Tests for the Power Law Process (1995), the National Seminar on Survival Analysis and Reliability, University of Calcutta, Calcutta, India.

IV. Papers Submitted:

Bayesian Integrated Functional Analysis of Microarray Data, with C.C. Pritchard, P.S. Nelson, E. Arjas

Estimation of Core Inflation Rate from Distribution of Price Changes: Evidence from Indian Trimmed-Mean Wholesale Price Index, with G.P.Samanta.

V. Work in progress:

The molecular program of mouse prostate development: functional analysis with the help of GO, with researchers from Fred Hutchinson Cancer Research Centre, USA and Elja Arjas, RNI.

To identify and compare concentration dependent effects of TCDD on gene expression in specific human cell lines, with researchers from the National Institute of Environmental Health Sciences, USA and Elja Arjas, RNI.

Analysis of genes underlying symptomatic Carotid artery disease, with researchers from Neuroscience Program, Biomedicum Helsinki and Elja Arjas, RNI.

Analysis of genes underlying various autoimmune diseases, in collaboration with researchers from National Public Health Institute, Helsinki and Elja Arjas, Sarish Talikota, RNI

Bayesian Analysis of Multilocus Association using WINBUGS, with Mikko J. Sillanpää, RNI.

Modelling and analysis of bleeding pattern induced by cchRT, with Elja Arjas.

VI. Others:

Inference for Repairable Systems with application to Exchange Rates, (2001), Department of Statistical Methodology, The Institute of Statistical Mathematics, Tokyo, Japan.

Some simulation studies on absolute and relative performances of two life table estimators (1993), Project on survival analysis, Indian Statistical Institute, Calcutta, under supervision of Prof. A. Dewanji.

The Importance of Stability of Money Demand in Monetary Targeting (1997), project report, RBI.

Monetary Management - A Review (1997), jointly with I. Bhattacharya, S. Chakraborty and D. Majumder, RBI.

Changes in the Composition of 'Liabilities and Assets in India', of all scheduled commercial banks during 1991 to 1996 - An analysis, (1997), report, RBI.