

## GENERAL INFORMATION

**Serena Arima** is Associate Professor of Statistics at the University of Salento and a member of the PhD in Data Science of the University of Rome "La Sapienza". Since 2003 she has held courses in Statistics and Probability, for both Bachelor and Master level of Economics courses at the University of Rome "La Sapienza" from which she moved on March 2020. She also held courses of Bayesian statistics and Biostatistics for several PhD schools. She is advisor of one PhD student and more than 30 Master and undergraduate students. She has coordinated or participated in several regional and national projects. The activity of methodological research concerns Bayesian methods with focus on latent trait models and model choice issue. In particular, she focused on hierarchical Bayesian models for small area estimation when covariates are affected by measurement error developing alternative estimators and defining alternative computational tools. Applied research is mainly focused on biostatistic application, with particular focus on gene expression and proteomic data.

Surname and Name

Address



Nationality

## PAST POSITIONS

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| 2018 | From 2018 to 1st March 2020, associate professor in Statistics at the Department of Methods and Models for Economy Territory and Finance at the University of Rome "La Sapienza". On 2nd of March, she moved to the University of Salento; |
| 2012 | From 2012 to 03/01/2018, assistant professor in Statistics at the Department of Methods and Models for Economy Territory and Finance at the University of Rome "La Sapienza".  |

## EDUCATION

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| 2010 | Post Doc position in Methodological Statistics at the University of Rome "La Sapienza". Title of the project: Bayesian models for latent traits: applied and methodological issues , Supervisor Prof. Brunero Liseo.  |
| 2009 | Ph.D. (Italian Dottorato di Ricerca) in Methodologica Statistics at the University of Rome "La Sapienza". Title of the Thesis: Bayesian tools for complex statistical models in genetics, Supervisor Prof. Luca Tardella.   |
| 2005 | Master of Science in Biostatistics, Center of Biostatistics, Hasselt University (Belgium). Title of the Thesis: Peabody Picture vocabulary test - revised data: a Bayesian approach to item response theory. Supervisor: Annouska Laenen. Cosupervisor: Luca Tardella. Votazione finale: great distinction. |

2004 Degree in Methodological Statistics (Italian "Laurea"), final vote 110/110 cum laude) at the University of Rome "La Sapienza", discussing a thesis with the subject: Bayesian hierarchical models for microarray data. Supervisor: Prof. Luca Tardella.

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## PROFESSIONAL EXPERIENCE

2015 - Today	Component of the project PRIN (National Research Project). Title of the project: Environmental processes and human activities: capturing their interactions via statistical methods (EPHASTAT). National coordinator: prof. D. Cocchi
; 2015 - Today	Component of the project PRIN (National Research Project). Title of the project: Likelihood free methods of inference. National coordinator: prof. B. Liseo
; 2008 - 2011	Component of the project PRIN (National Research Project). Title of the project: New developments in sampling: applied and theoretical issues. National coordinator: prof. D. Cocchi
2007 - 2008	Component of the project funded by University of Rome "La Sapienza". Title of the project: Bayesian methods and IRT models for a case study: Peabody Picture Vocabulary Test - Revised (PPVT-R). Coordinator: prof. L. Tardella
2008 - 2009	Component of the project funded by University of Rome "La Sapienza". Title of the project: statistical methods for the identification of cluster and filaments with application to cosmology and genetic data. Coordinator: prof. M. Perone Pacifico
2008 - 2009	Component of the project funded by University of Rome "La Sapienza". Title of the project: Advances in population size estimation. Coordinator: prof. A. Farcomeni
2011 - 2012	Component of the project funded by University of Rome "La Sapienza". Title of the project: Approximate Bayesian Computation (ABC). Coordinator: prof. B. Liseo
2011- 2012	Coordinator of the project funded by University of Rome "La Sapienza". Title of the project: Model choice issues in a Bayesian perspective: theoretical developments and application (8000 euro)
2012- 2013	Coordinator of the project funded by University of Rome "La Sapienza". Title of the project: Bayesian methods for small area estimation: economic and demographic applications (12000 euro)
2016- 2017	Coordinator of the project funded by University of Rome "La Sapienza". Title of the project: Small area estimation: measurement error, benchmarking and record linkage(12000 euro + 22000 for a post doc position)

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## ADMINISTRATIVE EXPERIENCES

Since 2020	Component of the commissione TECO at the University of Salento
2017	President of the committee for the selection of 72 researcher position at ISTAT (italian statistical institute)
Since 2018	Member of the Doctoral Research Board for the PhD in <i>Data Science</i> at the University of Rome "La Sapienza"
2018-2020	Component of the Informatics commission of the University of Rome "La Sapienza"
2017-2020	Component of the monitoring and quality commission of the faculty of Economics at the University of Rome "La Sapienza"
2014-2016	Component of the research grant commission of the University of Rome "La Sapienza"
Since 2015	Component of several commissions for evaluating PhD candidates and PhD thesis in Statistics in different doctoral schools
2012-2014	Head committee of the Young Section of the Italian Statistical Society (SIS)

## TEACHING ACTIVITY

2012-17	From 2012 she held courses of Applied Statistics (in english), Advance statistics and Econometrics (in english), Statistical inference, Statistics for Bachelor degree courses at the Faculty of economics at University of Rome La Sapienza;
2015-16	Lecturer of <i>Introduction to statistics with R</i> for the European PhD school in Demography, Sapienza University of Rome (6 hours in English);
2014-15	lecturer of <i>Generalized Linear Models</i> for the PhD school in Economics, Sapienza University of Rome (8 hours in English);
2012-13	lecturer of <i>Multivariate analysis</i> for the PhD school in Ecology and Climatic Change, University of Salento (15 hours in English);
2011-12	lecturer of <i>Introduction to phytoplankton community ecology</i> for the PhD school in Ecology and Climatic Change, University of Salento (15 hours in English);
2012-13	lecturer of <i>Metodi computazionale per l'economia e la finanza</i> for the master degree in Finance and Insurance, Sapienza University of Rome(9 hours);
2011-12	computer lab for the course <i>Approximate Bayesian Computation and other likelihood free methods</i> (lecturer C.P. Robert) Sapienza University of Rome(4 hours in english);
2011-12	lecturer of <i>An introduction to spatial data with R</i> for the master Spatial Econometrics Advanced institute (5 in english);
2010-11	during 2009-10 and 2010-11 she was lecturer for the postgraduate Master BAFi teaching <i>Applied Statistics</i> and <i>Stochastic Processes</i> ;
2007-2012	from 2007, she was lecturer during the course for the diffusion of the statistical software R organized at the faculty of statistics of the Sapienza University of Rome (introduction to R, multivariate statistics with R, Bayesian statistics with R and WinBUGS). Some of these courses have been held at the MIUR, ISS, Comando generale guardia di Finanza.

## PAPERS PUBLISHED IN JOURNALS

2019	S.Arima, S. Poletti (2019) A unit-level small area model with misclassified covariates, <i>Journal of the Royal Statistical Society: Series A</i> (accepted)
2019	F. Midulla, R. Nenna, R. C. Scagnolari, L. Petrarca, A. Frassanito, A. Viscido, S. Arima, G. Antonelli (2019) How respiratory syncytial virus genotypes influence the clinical course in infants hospitalized for bronchiolitis <i>J Infect Dis</i> , 219 (4), 526-534.
2018	S. Lucchetti, G. Pastore, G. Leonib, S. Arima, N. Merendino, S. Baima, R. Ambra (2018) A simple microsatellite-based method for hazelnut oil DNA analysis, <i>Food Chemistry</i> , 245, 812–819
2017	M. Tubaro, A. Sciahbasi, R. Ricci, M. Ciavolella, D. Di Clemente, C. Bisconti, G. Ferraiuolo, M. Del Pinto, M. Mennuni, F. Monti, E. Vinci, R. Semeraro, C. Greco, S. Berti, C. Romano, A. Aiello, F. Lo Bianco, R. Pellicchia, P. Azzolini, D. Ciuggetta, R. Zappulo, A. Gigantino, S. Arima, F. Colivicchi and M. Santini (2017) Early invasive versus early conservative strategy in non-ST-elevation acute coronary syndrome: An outcome research study. <i>European Heart Journal Acute Cardiovascular Care</i> , 6(6), 477-489
2016	L. Dei Giudici, R. Fabbrini, L. Garro, S. Arima, A. Gigante, A. Tucciarone (2016) Arthroscopic transphyseal anterior cruciate ligament reconstruction in adolescent athletes, <i>Journal of Orthopaedic Surgery</i> , 24(3), 307–311
2017	R. Nenna, R. Cutrera, A. Frassanito, C. Alessandrini, A. Nicolai, G. Cangiano, L. Petrarca, S. Arima, S. Caggiano, N. Ullman, P. Papoff, E. Bonci, C. Moretti, F. Midulla (2017) Modifiable risk factors associated with bronchiolitis, <i>Therapeutic Advances in Respiratory Diseases</i> , p. 1–9

- 2017 R. Nenna, M. Evangelisti, A. Frassanito, C. Scagnolari, A. Pierangeli, G. Antonelli, A. Nicolai, S. Arima, C. Moretti, P. Papoff, Paola M.P. Villa F. Midulla (2017) Respiratory syncytial virus bronchiolitis, weather conditions and air pollution in an Italian urban area: An observational study, *Environmental Research*, 158, p. 188–193
- 2017 S. Arima, W. Bell, G.S. Datta, C. Franco and B. Liseo (2017) Multivariate Fay-Herriot Bayesian Estimation of Small Area Means under Functional Measurement Error, *Journal of the Royal Statistical Society: Series A*, accepted (DOI: 10.1111/rssa.12321)
- 2016 L. Zamparini, S. Vergori and S. Arima (2016) Assessing the determinants of local tourism demand: a simultaneous equations model for the Italian Provinces, *Tourism Economics*, doi: 10.1177/1354816616656423
- 2015 A. Menniti, P. Demurtas, S. Arima and A. De Rose (2015) Housework and childcare in Italy: A persistent case of gender inequality, *Genus*, 71(1), p.79–108
- 2015 L. Dei Giudici, D. Enea, L. Pierdicca, S. Cecconi, S. Ulisse, S. Arima, A. Giovagnoni and A. Gigante (2015) Evaluation of patello-femoral alignment by CT scans: interobserver reliability of several parameters, *Radiologia Medica*, 120 (11), p. 1031–1042
- 2015 S. Poletti and S. Arima (2015) Small area estimation with covariates perturbed for disclosure limitation, *Statistica*, 75 (1), p. 57–72.
- 2015 S. Arima (2015) Item selection via Bayesian IRT models, *Statistics in Medicine*, 34 (3), p.487–503.
- 2015 S. Arima, G.S. Datta and B. Liseo (2015) Bayesian estimators for small area models when auxiliary information is measured with error. *Scandinavian Journal of Statistics*, 42(2), p.518–529
- 2015 A. Pollice, S. Arima, G. Jona Lasinio, A. Basset and I. Rosati (2015) Bayesian analysis of three indices for lagoons ecological status evaluation *Stochastic Environmental Research and Risk Assessment*, 20(2), p. 477-485.
- 2013 P. Demurtas, A. Menniti and S. Arima (2014) La condivisione dei lavori domestici tra uomini e donne. Uno studio sui dati italiani dell'uso del tempo *Sociologia e ricerca sociale* n. 103
- 2013 F. Gabrielli, R. Salvi, C. Garulli, C. Kalogris, S. Arima, L. Tardella, P. Monaci, S. M. Pupa, E. Tagliabue, M. Montani, E. Quaglino, C. Curcio, C. Marchini and A. Amici (2013) Identification of relevant conformational epitopes on the HER2 oncoprotein by using Large Fragment Phage Display (LFPD), *PlosONE*, 8(3) (doi: 10.1371/journal.pone.0058358)
- 2013 S. Arima, A. Basset, G. Jona Lasinio, A. Pollice and I. Rosati. (2013) A hierarchical Bayesian model for the ecological status classification of lagoons, *Ecological modelling*, 263, p. 187-195.
- 2012 Diacinti D, Del Fiacco R, Pisani D, Todde F, Cattaruzza MS, Diacinti D, Arima S, Romagnoli E, Pepe J, Cipriani C, Minisola S (2012) Diagnostic Performance of Vertebral Fracture Assessment by the Lunar iDXA Scanner Compared to Conventional Radiography, *Calcified Tissue International*, 91(5), 335-342
- 2012 L. Fava, S. Vicari, G. Valeri, L. D'Elia, S. Arima, K. Strauss (2012) Intensive Behavioural intervention for school-aged children with autism: Una Breccia nel Muro (UBM) - A comprehensive Behavioural model, *Research in Autism and Spectrum Disorders* 6, p. 1273-1288
- 2012 A. Farcomeni and S. Arima (2012), A Bayesian autoregressive three-state hidden Markov model for identifying switching monotonic regimes in Microarray time course data, *Statistical Applications in Genetics and Molecular Biology*, 11(4), article 3 (DOI: 10.1515/1544-6115.1778)
- 2012 S. Arima, G. Datta and B. Liseo (2012) Objective Bayesian analysis of a measurement error small area model, *Bayesian Analysis*, 2012, 7(2), p. 363-384
- 2012 S. Arima and L. Tardella (2012) Improved harmonic mean estimator for phylogenetic model evidence, *Journal of Computational Biology*, 19(4): 418-438
- 2012 K Strauss, S Vicari, G Valeri, L D'Elia, S. Arima, L Fava (2012) Parent inclusion in early intensive behavioral intervention: The influence of parental stress, parent treatment fidelity and parent-mediated generalization of behavior targets on child outcomes, *Research in Developmental Disabilities*, 33(2), p.688–703

- 2012 S. Arima, L. Cretarola, G. Jona Lasinio and A. Pollice (2012) Bayesian Univariate Space - Time Hierarchical Models for Mapping Pollutant Concentrations in the Municipal Area of Taranto, *Statistical Methods Applications*, 2012, 21(1), p. 75-91
- 2012 S. Arima, J. Li, V. Pecora and Tardella L. (2012) A Bayesian Hierarchical model for identifying epitopes in peptide microarray data *Biostatistics*, 2012, 13 (1), p. 101-112
- 2011 S. Russo, L. Carlucci, C. Cipriani, A. Ragno, S. Piemonte, R. Del Fiacco, J. Pepe, V. Fassino, S. Arima, E. Romagnoli and S. Minisola (2011) Metabolic changes following 500 mcg monthly administration of calcidiol: a study in normal females, *Calcified Tissue International*, 89(3), p. 252-257
- 2011 L. Fava, K. Strauss, G. Valeri, L. D'Elia, S. Arima, S. Vicari (2011) The effectiveness of a cross-setting complementary staff and parent mediated Early Intensive Behavioural Intervention for young children with ASD, *Research in Autism Spectrum Disorders*, 5(4), p.1479-1492
- 2011 S. Arima, B. Liseo, F. Mariani and L. Tardella (2011) Exploiting blank spots for model-based background correction in discovering genes with DNA array data *Statistical Modelling*, 2011, 11(2), p. 89-114
- 2009 P. Carli, S. Arima, V. Fogliano, L. Tardella, A. Barone, L. Frusciante and M. R. Ercolano (2009) Use of network analysis to capture key traits affecting tomato organoleptic quality, *Journal of experimental botany*, 60(12), p. 3379-3386
- 2008 D. Mocini, P. Muso, E. Guendouz, L. De Marco, L. Mele, R. Cini, P. Sordini, A. Alois, A. Costantino, S. Arima, C. Gentili, M. Santini (2008) Endogenous erythropoietin and a single bolus of 40,000 IU of epoetin alpha do not protect the heart from ischaemia-reperfusion injury during extracorporeal circulation for cardiac surgery, *Perfusion*, 23(3), 187-192

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## PAPERS PUBLISHED IN BOOKS

- 2019 S. Arima and S. Poletini (2019) An investigation of Hierarchical and Empirical Bayesian small area predictors under measurement error, in *Springer Volume New Statistical Developments in Data Science*, (accepted)
- 2017 A. Menniti, P. Demurtas, **S. Arima** and A. De Rose (2017) Gender gap in time on housework: the case of Italy, in *Ageing, lifestyles and economic crisis: the new people of Mediterranean*. Editors T. Bloss, E. Ambrosetti, I. Widmer Bloss, M. Pages, S. Oliveau, Routledge, ISBN: 978113804026-7
- 2014 S. Arima and L. Tardella (2014) IDR for marginal likelihood in Bayesian phylogenetics, in *Bayesian phylogenetics: methods, algorithms and applications*. Editors Ming-Hui Chen, Lynn Kuo, Paul O. Lewis, Chapman & Hall/ CRC Mathematical and Computational Biology, p.25-55.
- 2014 S. Arima, G.S. Datta and B. Liseo (2014) Accounting for measurement error in covariates in SAE: an overview, in *Analysis of poverty data by small area methods*, Editors Monica Pratesi, Wiley, p.151-170, ISBN: 9781118815014

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## PROCEEDINGS

- 2014 S. Poletini and S. Arima (2014) Small Area Estimation with Covariates Perturbed for Disclosure Limitation, Proceedings of the XLVII Scientific Meeting of the Italian Statistical Society, ISBN: 978-88-8467-874-4, CUEC Cooperativa Universitaria Editrice Cagliaritana, p. 1-6 (10-14 June 2014- Cagliari)

- 2014 I. Rosati, A. Pollice, S. Arima, G. Jona Lasinio and A. Basset. (2014) Uncertainty of methodologies assessing ecological status in transitional water systems, Proceedings of the XLVII Scientific Meeting of the Italian Statistical Society, ISBN: 978-88-8467-874-4, CUEC Cooperativa Universitaria Editrice Cagliaritana, p. 1-6 (10-14 June 2014- Cagliari)
- 2013 S. Arima, G. Petris and L. Tardella (2013) Rare events probability estimation of sums of heavy-tailed random variables: an alternative approach, in Atti di Convegno: SCo.2013 Complex Data Modelling and Computationally Intensive Statistical Methods for Estimation and Prediction, Politecnico di Milano, 9-12 settembre 2013, ISBN 9788864930190
- 2013 S. Arima (2013) Bayesian item selection via Graded response model, Proceedings of the 28th International Workshop on Statistical Modelling, (Muggeo VMR, Capursi V, Boscaino G, Lovison G, editors), vol.2, p., 485-489, ISBN Vol. 2 978-88-96251-49-2
- 2013 A. Pollice, S. Arima, G. Jona Lasinio, A. Basset, I. Rosati (2013) Bayesian analysis of the multivariate dependence of three transition water ecosystem classifications, SIS 2013, Brescia, 19-21 Giugno, Electronic Book "Advances in Latent Variables", Eds. Brentari E., Carpita M., Vita e Pensiero, Milan, Italy, ISBN 978 88 343 2556 8
- 2012 S. Arima, A. Basset, G. Jona Lasinio, A. Pollice and Ilaria Rosati (2012) A hierarchical bayesian model for modelling benthic macroinvertebrates densities in lagoons, Proceedings of the XLVI Scientific Meeting of the Italian Statistical Society, ISBN:978-88-6129-882-8, CLEUP, p. 1-4 (20-22 June 2012- Roma)
- 2011 S.Arima, B. Liseo and G. Datta. Objective Bayesian model selection and inference for small area models, Proceedings ITACOSM 2011 "Survey Research Methods and Applications", ISBN: 978-88-8492-772-9, Pisa University Press, Pisa, p. 25-28 (27-29 June 2011 - Pisa)
- 2010 S. Arima, G. Petris and L. Tardella (2010) Alternative rare events probability estimation, Proceedings SIS 2010, ISBN: 978-88-6129-566-7, p. 1-8 (29 June - 1 July 2010 Padova)
- 2009 S. Arima, V. Pecora and L. Tardella (2009) *Identifying epitopes in allergic reactions through hierarchical Bayesian modelling*, 2009, Book of Short Papers, Meeting of the *Classification and Data Analysis Group* (CLADAG) 2009, 9-11 settembre, Catania, CLEUP, Padova, pp.413-416, ISBN 978-88-6129-406-6
- 2009 S. Arima, A. Cuteri, V. Pecora and L. Tardella (2009) Model comparison for proteomic array data S.Co. 2009 - Complex Data Modelling and Computationally Intensive Methods for Estimation and Prediction. Conference Proceedings. Maggioli Editore. ISBN: 8838743851
- 2009 S. Arima, V. Pecora and L. Tardella (2009) *A Bayesian hierarchical model for comparing ovalbumin epitopes in allergic patients before and after oral specific desensitization*, Proceedings del convegno SIB 2009, 10-12 giugno 2009, Ponte di Legno, pp.17-20
- 2008 S. Arima and L. Tardella (2008) Bayesian tools for phylogenetic studies Book of Short Papers SFC- CLADAG 2008, ISBN/ISSN: 9788849516562. Edizioni Scientifiche Italiane, Napoli, p. 139-142 (11-13 June 2008, Caserta)
- 2007 S. Arima– and L. Tardella (2007) A Bayesian approach to Peabody Picture Vocabulary Test Revised, Book of short papers 6° Meeting of of the Classification and Data Analysis Group of the Italian Statistical Society 2007, ISBN/ISSN: 978-88-6056-020-9 , p.333-336 (12-14 September 2007, Macerata).
- 2005 S. Arima, B. Liseo e L. Tardella (2005) A mixture model for detecting relevant genes in macroarrays In Modelli complessi e metodi computazionali intensivi per la stima e la previsione (C. Provasi Ed.) Proceeding of S.Co 2005, Bressanone, pag. 347–352. Cleup Padova.
- 2005 S. Arima, B. Liseo e L. Tardella (2005) Bayesian analysis for gene classification in MTB infections in Book of Short Papers, Meeting of the Classification and Data Analysis Group (2005), pp. 27-30, Monte Università Parma Editore. ISBN: 887847066X

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## SELECTED CONFERENCES

2020	Conference SAE 2020, Naples. Title of the talk: "Record linkage, measurement error and unit level small area estimation: a Bayesian approach. Invited talk
2019	Conference GRASPA 2019, Pescara. Title of the talk: " Advances in environmental latent variable models". Invited talk
2019	International Congress Tourism in Islands in the XXI Century: Dynamics and Challenges", La Orotava (Tenerife, Canarie), November 2019. Title of the talk: "Mobility decision and tourism geography: the case of Italy". Invited talk
2018	Conference SIS 2018 (Palermo). Title of the talk:"Determinants and geographical disparities of BMI in African Countries: a measurement error small area approach". Invited talk
2018	Conference SAE 2018 (Shanghai). Title of the talk:"Small Area Estimation under Post Randomization". Invited talk
2015	Conference ERCIM 2015 (London). Title of the talk:Unit level small area model with covariates perturbed for disclosure limitation". Invited talk
2014	Conference SAE 2014 (Poznan, Poland). Title of the talk:"Multivariate Fay-Herriot model with structural measurement error". Invited talk
2010	Annual Meeting of the German Statistical Society 2010 (Norimberga). Title of the talk: "An alternative marginal likelihood estimator for phylogenetic models" . Invited talk
2009	ERCIM 2009, Limassol, Cyprus. Title of the talk: "An alternative marginal likelihood estimator for phylogenetic models" . Invited talk

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## EDITORIAL SERVICES

Since 2019- Today

Associate editor of international journal Statistical Methods and Applications, Springer)

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## CONFERENCE ORGANIZATION

2020	Member of Scientific Committee of the 50 Italian Statistical Meeting (22-24 June 2020)
2020	Organizer of the session <i>Latent variables in small are models: theoretical and applied issues</i> of the conference SAE 2020 (6-8 July, Naples)
2017	Member of the organizing committee of the international workshop SIS Bayes 2017, 7-8 february 2017
2013	Member of the organizing committee of the international workshop ABC in Rome 2013, 30-31 may 2013

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## SCIENTIFIC ASSOCIATIONS

Italian Statistical Society - Società Italiana di Statistica. Full Member  
Institute of Mathematical Statistics. Full Member

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## SOFTWARE

Data Analysis Software  
Operative Systems  
Office Automation & Editing

Matlab, SPSS, R, SAS, S-Plus, C, LisRel  
Windows, Linux, Lion, Ubuntu  
Microsoft Office, Open Office, L<sup>A</sup>T<sub>E</sub>X

In riferimento al D.lgs 196/03 Codice in materia di protezione dei dati personali ed al GDPR (Regolamento UE 2016/679) autorizzo il trattamento dei miei dati personali e professionali per esigenze connesse al procedimento al quale lo stesso collegato.

Serena Arima