

# Silvia Metelli

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Université de Paris  
CRESS, INSERM

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## RESEARCH INTERESTS

A broad interest in dynamic network analysis - with applications spanning from healthcare to cybersecurity - network meta-analysis and dynamic treatment regimes for personalised medicine. Specific interests include multivariate mixed models, Bayesian nonparametric latent feature models and clustering techniques. I am also interested in visualisation techniques for complex data.

## CURRENT POSITION

**Assistant Professor of Statistics** (fixed term), University of Paris, 2020 - present

## PREVIOUS POSITIONS

**Postdoctoral Research Associate**, The Alan Turing Institute & Imperial College London,  
March 2018 - Oct 2019, worked under the Grand Challenge *Monitoring complex systems with rare high-consequence events*

**External Consultant**, Jinn Capital, London, Dec 2016 - Sept 2017, worked on Machine Learning models for time-series data

## EDUCATION

*Ph.D.*, Statistics (award date: 1 October 2018)  
Department of Mathematics - Statistics Section,  
Imperial College London, 2014 - 2018,  
Supervisor: Professor Nicholas A. Heard

*MRes Degree*, Mathematical Sciences  
*Distinction*  
Imperial College London, 2013 - 2014

*Short Advanced Course*, Survival Analysis  
Statistical Science PhD School, University of Padua, June 2012

*Master of Science*, Statistical Sciences  
Thesis: Bayesian Estimation with INLA for logistic multilevel models,  
*110/110 cum laude - publication recommended*  
University of Florence, 2010 - 2012

*Bachelor of Science*, Statistics  
Thesis: Estimation methods for discrete multilevel models,  
*110/110 cum laude*  
University of Florence, 2007 - 2010

## VISITING EXPERIENCES

*Visiting PhD Researcher*      Los Alamos National Laboratory, June 2015 - Aug 2015  
Advanced Computing Solutions - PO Office  
Los Alamos, New Mexico, US

## TEACHING

**Teaching Assistant**, Imperial College London, Oct 2014 - 2017

Teaching assistant for the following courses: *Probability & Statistics I*, *Probability & Statistics II*, *Statistical Modelling I*, *Statistical Modelling II*, *Python*, *MATLAB*.

**Teaching Lecturer**, École Normale Supérieure Paris-Saclay, March 2021

Lecturing at the Biostatistics course of M2 MVA (Mathématiques/Vision Apprentissage). Topics covered: statistics for dynamic treatment regimes, just-in-time adaptive interventions

## SUPERVISION OF STUDENTS

June 2019 - Sept 2019: Supervision of a UROP (Undergraduate Research Opportunity Programme) student, BSc in Mathematics, Imperial College London.

Project: Random forests for classification of computer network data.

Feb 2021 - July 2021: Supervision of a master student, Master in Public Health, University of Paris.

Project: Clinical prediction models for routinely collected intensive care unit data.

## PUBLICATIONS

T. Evrenoglou, S. Metelli and A. Chaimani. Introduction to meta-analysis. In: Piantadosi S., Meinert C.L. (eds) *Principles and Practice of Clinical Trials*. Springer, Cham. 2021.

S. Metelli and A. Chaimani. Challenges in meta-analyses with observational studies. *Evidence-Based Mental Health*, 23 (2), 83-87, 2020.

S. Metelli and N.A. Heard. On Bayesian New Edge Prediction and Anomaly Detection in Computer Networks. *The Annals of Applied Statistics*, 13 (4), 2586-2610, 2019.

S. Claudiani, S. Metelli, R. Kamvar, R. Szydło, A. Khan et al. Introducing a Predictive Score for Successful Treatment Free Remission in Chronic Myeloid Leukemia (CML). *Blood*, 134, 26, 2019.

S. Metelli. New Edge Activity and Anomaly Detection in a Large Computer Network. *PhD Thesis*, Imperial College London, 2018.

S. Metelli and N.A. Heard. Model-based clustering and new edge modelling in large computer networks. *Proceedings of the IEEE Intelligence and Security Informatics Conference (ISI)*, 91-96, 2016.

L. Grilli, S. Metelli\* and C. Rampichini. Bayesian estimation with integrated nested Laplace approximation for binary logit mixed models. *Journal of Statistical Computation and Simulation*, 85 (13), 2718-2726, 2015. (\*co-first author)

S. Metelli and N.A. Heard. Modelling new edge formation in a computer network through Bayesian variable selection. *Proceedings of the IEEE Joint Intelligence and Security Informatics Conference (JISIC)*, 272-275, 2014.

## SUBMITTED and WORKING PAPERS

S. Metelli, D. Mavridis, P. Créquit, A. Chaimani. Bayesian model-based outlier detection in network meta-analysis. *Submitted*.

S. Claudiani, S. Metelli, R. Kamvar, R. Szydło et al. A Predictive Score for Successful Treatment Free Remission in Chronic Myeloid Leukemia (CML). *Submitted (extended version)*.

S. Metelli, A. Chaimani. An interactive tool for network meta-analysis visualization. *Working Paper*.

S. Metelli et al. Using dynamic networks approaches for the study of temporal multi-morbidity trajectories. *Working Paper*.

## CONFERENCES and WORKSHOPS

*2021 Society of Research Synthesis Methods Meeting*, SRSB, Jul 2021, Virtual from Bern, SW  
*2020 Cochrane Colloquium*, Oct 2020, Toronto, CA (accepted for oral presentation, cancelled for Covid-19)  
*2020 International Society Conference of Clinical Biostatistics, ISCB41*, Aug. 23-27, Krakow, PL  
*2018 Computational and Methodological Statistics, CMStatistics*, Dec. 14-16, Pisa, IT  
*2017 Statistical Data Science Workshop*, July 3-5, London, UK  
*2017 Data Science for Cyber-Security*, Sept. 25-27, London, UK  
*2016 Quick Fire talks*, Imperial College London, Nov. 4, London, UK  
*2016 IEEE Intelligence and Security Informatics Conference (ISI)*, Sept. 28-30, Tucson, AZ  
*2015 Quick Fire talks*, Imperial College London, Oct. 30, London, UK  
*2015 Dynamic Networks and Cyber Security Workshop*, June 22-24, Bristol, UK  
*2014 IEEE Joint Intelligence and Security Informatics Conference*, Sept. 24-26, The Hague, NL  
*2013 International Workshop on Statistical Modelling, IWSM*, July 7-11, Palermo, IT  
*2013 International Workshop on Simulation*, May 21-25, Rimini, IT

## DSG & DATA CHALLENGES

*2018 The Alan Turing Institute Data Study Group*, Dec. 10-14, London, UK

## INVITED TALKS

*2019 2nd IMA and OR Society Conference on Mathematics of Operational Research*, Birmingham, UK  
*2019 Centre of Research in Epidemiology and Statistics Sorbonne Paris Cite*, Paris, FR  
*2019 Data Science Institute*, Imperial College London, London, UK

## AWARDS

**Seal of Excellence** - European Commission certificate of excellence for a Marie Skłodowska-Curie Individual Fellowship application (certificate awarded to applications scoring 85% or above), 2019  
**Statistical Data Science Award** - Best poster award, Statistical Data Science UK, 2017  
**Graduation Prize Villa Favard** - Most original thesis of the years 2011-2012, University of Florence, 2012  
**Merit and Productivity-based Award** - University of Florence, 2010-2012

## GRANTS

**Marie Skłodowska-Curie Individual Fellowship 2020** - European Commission (€ 184 707.84)  
**IEEE-ISI Student Travel Grant** - Mobility grant IEEE-ISI 2016 (\$500)  
**Santander Mobility Grant** - Travel grant for the year 2014-15 (£1000)

## FUNDING

**Full PhD scholarship** - Four year studentship, Imperial College London, Dept. Mathematics  
**Visiting PhD scholarship** - Advanced Computing Solutions, Los Alamos National Laboratory, NM

## OTHER ACTIVITIES

Reviewer for Technometrics, IEEE/ACM Transactions on Networking, Research Synthesis Methods, Frontiers in Public Health & more

## TECHNICAL SKILLS

**Python, R**: Extensive experience (in order of proficiency)  
**Data Visualisation**: Gephi, Dash, Cytoscape  
**Applications**: LaTeX, UNIX, Microsoft Office  
**Distributed computing**: Apache Hadoop  
**Operating Systems**: Experience with Linux, Mac and Microsoft Windows

## LANGUAGES

**Italian**: native speaker, **English**: fluent, **French**: working knowledge