# Silvia Metelli

Marie Skołodowska-Curie Individual Fellow
Université de Paris

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personal website, professional page, GitHub

## RESEARCH INTERESTS

A broad interest in dynamic network analysis (applications spanning from healthcare to cybersecurity), network meta-analysis and dynamic treatment regimes for personalised medicine. Specific interests include multivariate mixed models, Bayesian nonparametrics and clustering techniques. I am also interested in novel and interactive visualisations of complex data.

## EMPLOYMENT

**Université de Paris** Research Assistant Professor, then Marie-Curie Individual Fellow, 2020 - present

**The Alan Turing Institute & Imperial College London** PostDoc, 2018 - 2020

**Jinn Capital** External Consultant, London, Dec 2016 - Sept 2017

**Los Alamos National Lab** Researcher, Advanced Computing Solutions, Los Alamos, US, 2015

## EDUCATION

**Imperial College London**
Ph.D, Statistics, Department of Mathematics, 2014 - 2018
MRes Degree, Mathematical Sciences, 2013 - 2014, *Distinction*

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

**University of Florence**
MSc in Statistical Sciences, 2010 - 2012, *summa cum laude, publication recommended* GPA:30/30
BSc in Statistics, 2007 - 2010, *summa cum laude*, GPA:30/30

## TEACHING

**École Normale Supérieure Paris-Saclay**
(2021) Taught courses in "Biostatisics", MSc Mathématiques/Vision Apprentissage
topics covered: statistics for dynamic treatment regimes and mobile health

**Université de Paris**
(2021) Taught courses in"Advanced Biostatisics", 3rd year students, Faculty of Medicine
(2021) Taught courses in "Advanced Meta-analysis", "Network meta-analysis",
MSc in Public Health in Comparative Effectiveness Research

**Imperial College London**, Dept. Mathematics
(2014 - 2017) Teaching assistant for: *Probability & Statistics I, Probability & Statistics II, Statistical Modelling I, Statistical Modelling II, Python, MATLAB*

## SUPERVISION OF STUDENTS

Sept 2022 - present: 1 student (co-supervisor), PhD student, University of Paris. Project: Meta-analysis and network meta-analysis for non-normal random-effects.

Jan - July 2022: 1 student (co-supervisor), MSc CER in Public Health, University of Paris. Project: Meta-analysis methods relaxing the random-effects normality assumption.

Feb - July 2021: 1 student, MSc in Big Data in Health, University of Paris. Project: Clinical prediction models for routinely collected ICU data: an application to critical care MIMIC-III data.

June - Sept 2019: 1 student, Undergraduate Research Opportunity Programme student, BSc in Mathematics, Imperial College London. Project: Random forests for classification of network data.

## SELECTED PUBLICATIONS

E. Charitakis, S. Metelli, L.O. Karlsson et al. Comparing efficacy and safety in catheter ablation strategies for atrial fibrillation: a network meta-analysis. *BMC Medicine*, 20 (1), 1-13, 2022.

R. Guelimi, S. Metelli, J.L. Bee, et al. Network meta-analysis: methodological points for readers, authors and reviewers. *British Journal of Dermatology*, 186, 6, 2022.

E. Charitakis, S. Metelli, L.O. Karlsson et al. Comparing efficacy and safety in catheter ablation strategies for paroxysmal atrial fibrillation: a network meta-analysis of randomized controlled trials. *Diagnostics*, 12 (2), 433.

S. Metelli, D. Mavridis, P. Créquit, A. Chaimani. Bayesian model-based outlier detection in network meta-analysis. *arXiv preprint arXiv:2109.06559* (Revisions at JRSS-A).

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

S. Metelli, P. Bhuyan *et al.* On personalised timing of treatment in mobile health. *Working Paper*

S. Metelli, A. Chaimani. Disentangling interactions between components of complex digital health interventions. *Working Paper.*

S. Metelli, A. Chaimani. NMAstudio: a fully interactive tool for producing and visualising network meta-analysis. *Working Paper.*

S. Metelli, A. Chaimani. *nmastudio*: a new Python package and web-application for producing and visualising network meta-analysis in Python. *Working Paper.*

## CONFERENCES and WORKSHOPS (contributed talks)

*2022 International Society Conference of Clinical Biostatistics*, Aug. 21-25, Newcastle, UK
*2022 Society of Research Synthesis Methods Meeting*, SRSM, Jul 2022, Portland, US
*2022 ESMARConf - R conference*, Feb 2022, Virtual worldwide
*2021 Society of Research Synthesis Methods Meeting*, SRSM, Jul 2021, Virtual from Bern, SW
*2020 Cochrane Colloquium*, Oct 2020, Toronto, CA (cancelled for Covid-19)
*2020 International Society Conference of Clinical Biostatistics*, 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 (poster)
*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 & 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

## INVITED TALKS

*2022 Cochrane Live Training Webinar Series*, Virtual worldwide
*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

## INVITED WORKSHOPS

*2022 three-day workshop on network meta-analysis*, Invited speaker, May 25-27, Biarritz, FR

## DATA CHALLENGES

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

## AWARDS

**Seal of Excellence** - European Commission certificate of excellence for a Marie Skołodowska-Curie Individual Fellowship application (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, University of Florence, 2012
**Merit and Productivity-based Award** - University of Florence, 2010 - 2012

## GRANTS

**Columbia University, Mailman School of Public Health, Grand Challenge**, 2022 - Pilot study "AI-Priority": AI tools to prevent multimorbidity progression ($ 176 000) (Co-Investigator)
**Marie Skołodowska-Curie IF**, 2020 - (€ 184 707.84) (Principal Investigator)
**IEEE-ISI Student Travel Grant**, 2016 - Mobility grant IEEE-ISI ($500)
**Santander Mobility Grant** 2015 - Travel grant (£1000)

## FUNDING

**Full PhD scholarship** - Four year studentship, Imperial College London
**Research scholarship** - Los Alamos National Laboratory

## OTHER ACTIVITIES

**Peer Review**: Technometrics, IEEE/ACM Transactions on Networking, Research Synthesis Methods, American Journal of Epidemiology & several other epidemiological/medical journals

**Mentor**: Selected as a mentor for LeadTheFuture (LTF) and WiML Mentorship, mentorship programmes for highly-selected STEM students (LTF acceptance rate $< 20\%$)

**Societies**: member of Digital Medicine Society (DiME), Research Synthesis Methods Society (SRSM)

## TECHNICAL SKILLS

**Python, R**: Extensive experience (in order of proficiency)
**Data Visualisation**: Gephi, Dash, Cytoscape
**Cloud platforms**: Heroku, Google BigQuery
**Distributed computing**: Apache Hadoop