

# Massimiliano Russo

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## Current position

**Postdoctoral fellow**, *Harvard Medical School program in Therapeutic Sciences within the Harvard-MIT Center for Regulatory Science*, I am also part of Dr Lorenzo Trippa's group at the Dana-Farber Cancer Institute (DFCI) department of Data Science.

Research interests Analysis and design of clinical trials; Decision theory; Bayesian nonparametrics; Tensor factorization; Categorical variables; Hierarchical models; Models for latent variables; Machine learning and Data mining; Computational statistics.

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## Education

2015–2019 **PhD in Statistical Sciences**, *University of Padova, Dept. of Statistical Sciences*,  
Thesis: *Bayesian inference for tensor factorization models*.  
Advisor: [Bruno Scarpa](#)

2013–2015 **Master in Statistical Sciences**, *University of Padova, Dept. of Statistical Sciences*, *Final Mark: 110/110 cum laude*,  
Thesis: *Olfactory perception differences in Italian regions: a nonparametric Bayesian approach to tensor factorization*.  
Advisor: [Bruno Scarpa](#); Co-advisor: Giancarlo Ottaviano

2009 – 2013 **Bachelor in Statistical and Actuarial sciences**, *Università degli studi del San-nio, Benevento, Final Mark: 110/110 cum laude*,  
Thesis: *Multivariate robust estimation*.  
Advisor: [Luca Greco](#)

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## Academic experience

Published Ottaviano, G., Nardello, E., Pendolino, A. L., Pozza, M. D., Russo, M.,  
Papers Savietto, E. Peter, J. A., Ermolao, A., *Nasal Function Changes at High*  
Refereed Journals *Altitude*, American Journal of Rhinology & Allergy, 2020.

Aliverti, E., Paganin, S., Rigon, T. and Russo, M., *A discussion on: Latent nested nonparametric priors* by Camerlenghi, F., Dunson, D.B., Lijoi, A., Prünster, I. and Rodriguez, A., *Bayesian Analysis*, 2019+.

Ottaviano, G., Pendolino, A. L., Nardello, E., Maculan, P., Martini, A., Russo, M. and Lund, V. J., *Peak nasal inspiratory flow measurement and visual analogue scale in a large adult population*, *Clinical Otolaryngology*; 44: 541–548, doi:10.1111/coa.13329., 2019.

Russo, M., Durante, D. & Scarpa, B., *Bayesian Inference on Group Differences in Multivariate Categorical Data*, *Computational Statistics & Data Analysis*. 126, 136-149, 2018.

- Cantone E., Ciofalo A., Vodicka J., Iacono V., Mylonakis I., Scarpa B., Russo M., Iengo M., de Vincentiis M., Martini A. and Ottaviano G., *Pleasantness of olfactory and trigeminal stimulants in different Italian regions.*, European Archives of Oto-Rhino-Laryngology, 1–7, 2017.
- Book Chapter & Proceedings **Cabassi, A., Casa, A., Fontana, M., Russo, M., and Farcomeni, A.,** *Three testing perspectives on connectome data*, Springer Proceedings in Mathematics & Statistics, vol 257, 37–55. Springer, Cham, 2018.
- Russo, M.,** *Detecting Group Differences in Multivariate Categorical Data*, Proceedings the Italian Statistical Society, Firenze University Press, 2017.
- Under review **Russo, M., Ventz, S., Wang, V., Trippa, L.,** *Inference in response-adaptive clinical trials when the enrolled population varies over time.*
- Aliverti, E. and Russo M.,** *Stratified stochastic variational inference for high-dimensional network factor model*, arXiv preprint, [arxiv.org/abs/2006.14217](https://arxiv.org/abs/2006.14217).
- Russo, M., Singer, B. H. & Dunson, D. B.,** *Multivariate mixed membership modeling: Inferring domain-specific risk profiles*, arXiv preprint, [arXiv:1901.05191](https://arxiv.org/abs/1901.05191).
- Teaching **Parallel Computing for big data analysis**, March 2018, Specialist lectures during the class of *Statistical Methods for Big Data Analysis* of Prof. Bruno Scarpa, University of Padova, Dept. of Statistical Sciences, Padova, Italy.
- Introduction to real analysis (B.Sc.)**, Year 2014/2015, Academic Tutor, University of Padova, Dept. of Statistical Sciences, Padova, Italy.
- Advanced statistical inference (M.Sc.)**, Year 2014/2015, Academic Tutor, University of Padova, Dept. of Statistical Sciences, Padova, Italy.
- Conferences & Talks **Advances in Bayesian methods for medical data**, *Bayesian Young Statisticians Meeting: Online*, (BAYSM:O 2020).
- Session organizer**
- Inference in clinical trials when the patient population is subject to changes over time**, (CMStatistics 2020), (Invited talk).  
session: "Recent developments in Bayesian methodology"
- Inference in clinical trials when the patient population is subject to changes over time**, *Joint Statistical Meeting of the American Statistical Society*, (JSM 2020), (Invited talk).  
topic contributed session: "Statistical innovation in regulatory science"
- Bayesian optimal sequential futility decisions via auxiliary endpoints**, *International Biometric Conference*, (IBC 2020), Accepted for contributed oral Presentation(selected among 700 submissions).  
canceled due to COVID-19
- Scalable inference for network factor model**, *Advanced Statistics for Physics Discovery*, Padova, Italy, September 24, 2018, (Contributed talk).
- Multivariate mixed membership modeling: Inferring domain-specific risk profiles**, *IBC2018*, Barcellona, Spain, July 10, 2018, (Contributed talk).
- Bayesian Inference on Group Differences in Multivariate Categorical Data**, *COBAL V*, Cimat, Guanajuato, Mexico, June 8, 2017, (Contributed talk).
- Posters **Inference in response-adaptive clinical trials when the enrolled population varies over time**, *2020 Global Conference on Regulatory Science*.

**Inference in response-adaptive clinical trials when the enrolled population varies over time**, *ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop 2020*.

**Inference in response-adaptive clinical trials when the enrolled population varies over time**, *DIA Regulatory Science Forum 2020*, .

**Inference in clinical trials when the patient population is subject to changes over time**, *HiTS Annual Symposium*, Boston, MA, USA, October 21, 2019, .

**Soft classification tree ensemble of Higgs pair production**, *Advanced Statistics for Physics Discovery*, Padova, Italy, September 24, 2018, .

**Multivariate mixed membership modeling: Inferring domain-specific risk profiles**, *ISBA2018*, Edinburgh, United Kingdom, June 29, 2018, .

**A multivariate mixed membership model for malaria risk detection**, *Obayes2017*, Austin, Texas, December 11, 2017, .

**Detecting Group Differences in Multivariate Categorical Data**, *SIS2017*, Florence, Italy, June 28, 2017, .

**Bayesian Inference on Group Differences in Multivariate Categorical Data**, *ISBA2016*, Sardinia, Italy, June 16, 2016, .

- Workshops & Summer Schools **NIMBLE short course**, UC Berkeley, June 2020, (online).  
3-day workshop on NIMBLE: a system for building and sharing analysis methods for statistical models, especially for hierarchical models and computationally-intensive methods.  
**Start-Up Research**, University of Siena, Italy, June 2017.  
A 2-day meeting where groups of young scholars, advised by senior researchers, were asked to develop innovative methods and models to analyze a common dataset from the Neurosciences.
- Data Hackathons **Duke Datathon**, Durham, NC, USA, February 2017.  
**Stats under the stars-3**, Firenze, Italy, June 2017.  
**Stats under the stars**, Padova, Italy, September 2015.
- Reviewer for: BMC Bioinformatics; Journal of Computational Methods in Sciences and Engineering (JCMSE); Computational Statistics and Data Analysis (CSDA); European Symposium on Artificial Neural Networks (ESANN) 2020; Social Indicator Research; Statistical Methods & Applications (SMA); Trials.
- Memberships International Society for Bayesian Analysis (ISBA); j-ISBA
- Outreach & events Regulatory Science Student & Faculty Mixer (October 2020)  
Meeting with graduate and prospective students to discuss research opportunities.  
Regsci Forum: Fellows Showcase. What the Harvard-MIT Center for Regulatory Science actually does? Wonder no more! (January 2020)  
Research presentation to describe the world of regulatory science to students.  
Big data Biosensori e Biobanche, December 2019  
Presentation of my research at Università degli Studi del Sannio.  
Harvard-MIT Center for Regulatory Science Open House: Learn about RegSci and research opportunity. (September 2019)  
Meeting with Harvard graduate students to discuss research opportunities.  
Volunteer for Venetonight – La notte dei ricercatori, Padova, Italy. (2015, 2016 & 2017)

Developed an online app interfacing with twitter to track and display in real-time the sentiment of the event.

Volunteer for StatisticAll, Treviso, Italy (2015)

Statistical games and activities to show the magic of statistics to kids and adults.

Volunteer at orientation days for high schools students, Scegli con noi. Campus Agripolis di Legnaro, Padova, Italy. (2015 & 2016)

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## Awards

Best poster award, second place winner for "Inference in Response-Adaptive Clinical Trials When the Enrolled Population Varies Over Time", ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop 2020

Best paper award for "Bayesian Inference on Group Differences in Multivariate Categorical Data" Dept. of Statistical Sciences, University of Padova (Research Prize 2018)

Winner of the *3 minutes thesis competition* selection of Dept. of Statistical Sciences, University of Padova, October 19, 2018.

Young researcher travel award ISBA2018, Edinburgh, United Kingdom.

Travel support for COBAL V (2017), Guanajuato, Mexico

Young researcher travel award ISBA2016, Sardinia, Italy.

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## Work experience

Feb. 2019 – Aug. 2019 **Data Analyst**, *WorkFor, WFIT CRM Services*, Roma.  
Data analysis and consulting.

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## Study visits

Nov. 2016 – June 2017 **Visiting Research Scholar**, *Duke University, Department of Statistical Science*, Durham, NC, USA, under the supervision of prof. [David B. Dunson](#).  
Sept. 2017 – Mar. 2018

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## Languages

Italian: native; English: fluent; French: basic; Spanish: basic.

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## Computing skills

Programming languages R: advanced knowledge of Rcpp, tidyverse and shiny libraries;  
C/C++, Python, Julia, Matlab, JAVA.

Operative System Linux (Fedora/Ubuntu), Windows, OSX and relative softwares.

Software SPSS, PSPP, Office, SQL/MYSQL, BUGS, JAGS, STAN, and NIMBLE.

Other L<sup>A</sup>T<sub>E</sub>X, git/github, vim & emacs, bash.

20 October 2020