

Academic Curriculum Vitae Simone Vantini

Personal information

First name / Surname **Simone Vantini**
Address Department of Mathematics, Politecnico di Milano,
Piazza Leonardo da Vinci 32, 20133 Milan, Italy
Telephones (+39) 02 2399 4584
Fax (+39) 02 2399 4568
E-mail simone.vantini@polimi.it
Nationality Italian

Research Interests

Functional Data Analysis
High-dimensional Data Analysis
Statistical Inference
Permutation Tests
Dimension Reduction
Blind Source Separation
Geostatistics
Epigenomics
Supervised and Unsupervised Classification

Present position

Feb 2015 - present
Associate Professor of Statistics (Professore universitario di II fascia, SECS-S/01),
MOX (Laboratory for Modeling and Scientific Computing), Department of Mathematics, Politecnico di
Milano, Piazza Leonardo da Vinci 32, 20133 Milan, Italy

Past positions

Oct 2009 - Feb 2015
Assistant Professor of Statistics (Ricercatore TD, SECS-S/01, L.230/2005),
MOX (Laboratory for Modeling and Scientific Computing), Department of Mathematics "Francesco
Brioschi", Politecnico di Milano, Piazza Leonardo da Vinci 32, 20133 Milan, Italy
Apr 2008 - Sep 2009
Post Doc position (Assegnista di Ricerca L.449/1997), research project "Modelli e metodi per la
classificazione e la regressione di dati funzionali - Models and Methods for Classification and
Regression of Functional Data",
MOX (Laboratory for Modeling and Scientific Computing), Department of Mathematics "Francesco
Brioschi", Politecnico di Milano, Piazza Leonardo da Vinci 32, 20133 Milan, Italy

Visiting

June 2019

University of North Carolina at Chapel Hill, Department of Statistics and Operations Research, 318 Hanes Hall, CB# 3260, Chapel Hill, NC 27599-3260, US

Jan 2016

University of Copenhagen, Department of Mathematical Sciences, Universitetsparken 5, DK-2100 Copenhagen Ø, Denmark

Nov 2015

Free University of Bozen/Bolzano, Alps Laboratory, Universitätsplatz 1 - piazza Università, 1, Bozen-Bolzano, 39100, Italy

Feb 2015

Umeå University, Department of Mathematics and Mathematical Statistics, Förvaltningshuset, Universitetstorget 16, 901 87 Umeå, Sweden

Nov 2013

Umeå University, Department of Mathematics and Mathematical Statistics, Förvaltningshuset, Universitetstorget 16, 901 87 Umeå, Sweden.

Feb 2012

École Centrale Paris, Laboratory of Mathematics Applied to Systems, Grande voie des vignes, 92295 Châtenay-Malabry Cedex, France.

Jan 2010

Emory University, Department of Mathematics and Computer Science, 201 Dowman Drive, Atlanta, GA 30322, United States.

Oct 2009 - Dec 2009

Massachusetts Institute of Technology, Department of Nuclear Science and Engineering, 77 Massachusetts Avenue, Cambridge, MA 02139, United States.

National Professional Qualifications

Apr 2018

National Academic Qualification as Full Professor of Statistics
(**Abilitazione scientifica nazionale alla funzione di professore universitario di I fascia per il settore concorsuale 13/D1 Statistica, DD 222/2012**)

Feb 2014

National Academic Qualification as Associate Professor of Statistics
(**Abilitazione scientifica nazionale alla funzione di professore universitario di II fascia per il settore concorsuale 13/D1 Statistica, DD 222/2012**)

2005

Professional Practice Exam in Engineering
(**Esame di Stato per l'abilitazione alla professione d'ingegnere, DPR 328/2001**)
Politecnico di Milano,
Piazza Leonardo da Vinci 32, 20133 Milan, Italy

Education

Mar 2005 - Feb 2008

PhD in Mathematical Engineering (ISCED-2011 Level 8)
Graduate School of Politecnico di Milano and Department of Mathematics "Francesco Brioschi", Politecnico di Milano, Piazza Leonardo da Vinci 32, 20133 Milan, Italy

Sept 1998 - Dec 2004

Laurea (Bachelor + MSc) in Nuclear Engineering (ISCED-2011 Level 7)
Curriculum: Mathematics and Physics for Nuclear Technologies
Final evaluation: 100/100 cum laude
Politecnico di Milano and CESNEF (Centro Studi Nucleari Enrico Fermi)
Piazza Leonardo da Vinci 32, 20133 Milan, Italy

Sep 1993 - Jun 1998

Maturità Scientifica (ISCED-2011 Level 3A)
Final evaluation: 60/60
Liceo Scientifico Leg. Ric. Istituto Salesiano S. Ambrogio,
Via Copernico 9, 20125 Milan, Italy

Journal Articles

- Galvani, M., Torti, A., Menafoglio, A., Vantini, S. (2021): "FunCC: A new bi-clustering algorithm for functional data with misalignment" *Computational Statistics and Data Analysis*, 160, 107219
- Lovato, I., Pini, A., Stamm, A., Taquet, M., Vantini, S. (2021): "Multiscale null hypothesis testing for network-valued data: Analysis of brain networks of patients with autism" *Journal of the Royal Statistical Society. Series C: Applied Statistics*, 70(2), pp. 372–397
- Bernardi, M.S., Africa, P.C., de Falco, C., Formaggia, L., Menafoglio, A., Vantini, S. (2021): "On the Use of Interferometric Synthetic Aperture Radar Data for Monitoring and Forecasting Natural Hazards" *Mathematical Geosciences*, online
- Olsen, N.L., Pini, A., Vantini, S. (2021): "False discovery rate for functional data" *Test*, online
- Torti, A., Pini, A., Vantini, S. (2021): "Modelling time-varying mobility flows using function-on-function regression: Analysis of a bike sharing system in the city of Milan" *Journal of the Royal Statistical Society. Series C: Applied Statistics*, 2021, 70(1), pp. 226–247
- LoMauro, A., Gandossini, S., Russo, A., Diella, E., Pistininzi, C., Marchi, E., Pascuzzo, R., Vantini, S., Aliverti, A., D'Angelo, M.G. (2021) "Over three decades of natural history of limb girdle muscular dystrophy type R1/2A and R2/2B: Mathematical modelling of a multifactorial study" *Neuromuscular Disorders*, 31(6), pp. 489–497
- Calissano, A., Sturla, P., Pucci, P., Fedeli, V., Vantini, S. (2020): "Going Beyond the Euclidean Setting in the Statistical Analysis of Human Movement in Urban Landscape", *Journal of Digital Landscape Architecture*, 150-158.
- Capezza, C., Lepore, A., Menafoglio, A., Palumbo, B., Vantini, S. (2020): "Control charts for monitoring ship operating conditions and CO2 emissions based on scalar-on-function regression", *Applied Stochastic Models in Business and Industry*, 36(3), pp. 477-500.
- Lovato, I., Pini, A., Stamm, A., Vantini, S. (2020): "Model-free two-sample test for network-valued data", *Computational Statistics and Data Analysis*, 144, 106896.
- Borgonovo, F., Ferrante, V., Grilli, G., Pascuzzo, R., Vantini, S., Guarino, M. (2020): "A data-driven prediction method for an early warning of coccidiosis in intensive livestock systems: A preliminary study", *Animals*, 10(4), 747
- Pallonetto, F., Galvani, M., Torti, A., Vantini, S. (2020): "A framework for analysis and expansion of public charging infrastructure under fast penetration of electric vehicles", *World Electric Vehicle Journal*, 11(1), 18
- Centofanti, F., Lepore, A., Menafoglio, A., Palumbo, B., Vantini, S. (2020): "Functional Regression Control Chart", *Technometrics*, in press.
- Calissano, A., Vantini, S., Arena, M. (2019): "Monitoring rare categories in sentiment and opinion analysis: a Milan mega event on Twitter platform", *Statistical Methods and Applications*, in press.
- Pini, A., Spreafico, L., Vantini, S., Vietti, A. (2019): "Multi-aspect local inference for functional data: Analysis of ultrasound tongue profiles", *Journal of Multivariate Analysis*, 170, pp. 162-185
- Riva, P., Sturla, P., Calissano, A., Vantini, S. (2019): "Landscape perception through complex data: Exploring george hargreaves's queen elizabeth Olympic Park in London", *Journal of Digital Landscape Architecture*, Vol. 4, pp. 42-56.
- Fontana, M., Tavoni, M., Vantini, S. (2019): "Functional Data Analysis of high-frequency load curves reveals drivers of residential electricity consumption", *PLoS ONE*, 14(6), e0218702
- Abramowicz, K., Häger, C.K., Pini, A., Schelin, L., Sjöstedt de Luna, S., Vantini, S. (2018): "Nonparametric inference for functional-on-scalar linear models applied to knee kinematic hop data after injury of the anterior cruciate ligament", *Scandinavian Journal of Statistics*, 45(4), pp. 1036-1061
- Lo Mauro, A., Romei, M., Gandossini, S., Pascuzzo, R., Vantini, S., D'Angelo, M.G., Aliverti, A. (2018): "Evolution of respiratory function in Duchenne muscular dystrophy from childhood to adulthood", *European Respiratory Journal*, 51(2), 1701418
- Pini, A., Stamm, A., Vantini, S. (2018): "Hotelling's T^2 in separable Hilbert spaces", *Journal of Multivariate Analysis*, 167, pp. 284-305
- Costa, E.D., Pascuzzo, R., Leach, M.C., Dai, F.a, Lebelt, D., Vantini, S., Minero, M. (2018): "Can grimace scales estimate the pain status in horses and mice? A statistical approach to identify a classifier", *PLoS ONE*, 13(8), e0200339
- Cremona, M.A., Pini, A., Cumbo, F., Makova, K.D., Chiaromonte, F., Vantini, S. (2018): "IWTomics: Testing high-resolution sequence-based 'Omics' data at multiple locations and scales", *Bioinformatics*, 34(13), pp. 2289-2291

- Vantini, S. (2018): "Wishing the Non-parametric Re-evolution", *Statistics and Probability Letters*, 136, pp. 139-141.
- Pini, A., Vantini, S., Colosimo, B. M., Grasso, M. (2018): "Domain-Selective Functional Analysis of Variance for Supervised Statistical Profile Monitoring of Signal Data", *Journal of the Royal Statistical Society – Series C*, 67(1), pp 55-81.
- Arnaboldi, M., Brambilla, M., Cassottana, B., Ciuccarelli, P., Vantini, S. (2017): "Urbanscope: A Lens to Observe Language Mix in Cities", *American Behavioral Scientist*, 61 (7), pp. 774-793.
- Parodi, A.C.L., Sangalli, L.M., Vantini, S., Amati, B., Secchi, P., Morelli, M.J. (2017): "FunChIP: An R/Bioconductor package for functional classification of ChIP-seq shapes", *Bioinformatics*, 33 (16), pp. 2570-2572.
- Abramowicz, K., Arnqvist, P., Secchi, P., Sjöstedt De Luna, S., Vantini, S., Vitelli, V. (2017): "Clustering misaligned dependent curves applied to varved lake sediment for climate reconstruction", *Stochastic Environmental Research and Risk Assessment*, Vol. 31(1), pp. 71-85.
- Pini, A., Vantini, S. (2017): "Interval-wise Testing for Functional Data", *Journal of Non-parametric Statistics*, 29 (2), pp. 407-424.
- Secchi, P., Vantini, S., Zanini, P. (2016): "Hierarchical independent component analysis: A multi-resolution non-orthogonal data-driven basis", *Computational Statistics and Data Analysis*, Vol. 95, pp. 133-149.
- Stamm, A., Commowick, O., Warfield, S.K., Vantini, S. (2016): "Comprehensive Maximum Likelihood Estimation of Diffusion Compartment Models Towards Reliable Mapping of Brain Microstructure." International Conference on Medical Image Computing and Computer-Assisted Intervention, pp. 622-630. Springer International Publishing.
- Canale, A. and Vantini, S. (2016): "Constrained functional time series: Applications to the Italian gas market", *International Journal of Forecasting*, Vol. 32(4), pp. 1340-1351.
- Pini, A., Vantini, S. (2016): "The Interval Testing Procedure: a general framework for inference in functional data analysis", *Biometrics*, Vol. 72(3), pp. 835-845.
- Arnaboldi, M., Brambilla, M., Cassottana, B., Ciuccarelli, P., Ripamonti, D., Vantini, S. dEmail Author, Volonterio, R., Vantini, S., Volonterio, R. (2016): "Studying multicultural diversity of cities & neighborhoods through social media language detection", *AAAI Workshop*, WS-16-16 - WS-16-20, pp. 2-7.
- Hébert-Losier, K., Pini, A., Vantini, S., Strandberg, J., Abramowicz, K., Schelin, L., Häger, C. K. (2015): "One-leg hop kinematics 20 years following anterior cruciate ligament rupture: Data revisited using functional data analysis", *Clinical Biomechanics*, Vol. 30(10), pp. 1153-1161.
- Cremona, M.A., Sangalli, L.M., Vantini, S., Dellino, G.I., Pelicci, P.G., Secchi, P., Riva, L. (2015): "Peak shape clustering reveals biological insights", *BMC Bioinformatics* 16:349.
- Secchi, P., Vantini, S., Vitelli, V. (2015): "Analysis of spatio-temporal mobile phone data: a case study in the metropolitan area of Milan " [with discussion], *Statistical Methods and Applications*, Vol. 24(2), pp. 279-300.
- Francesca, Ieva; Piercesare, Secchi; Simone, Vantini (2015): "Big data: the next challenge for statistics" *Lettera Matematica*, Vol. 3(3), pp.111-120.
- La Rosa, L., Petrone, A., De Ghetto, G., Rainaldi, I., Scataglini, L., Maccagni, A, Arena, M., Vantini, S. (2014): "Evaluating reputational risk and implications of a major Accident Hazard in E&P activities: A qualitative methodology", *Society of Petroleum Engineers - SPE International Conference on Health, Safety and Environment 2014: The Journey Continues*, 2, pp. 1039-1050.
- Sangalli, L. M., Secchi, P., Vantini, S. (2014): "Object Oriented Data Analysis: a few methodological challenges" (Discussion of "Overview of object oriented data analysis" by Marron, J.S. and Alonso. A.M.), *Biometrical Journal*, Vol. 56(5), pp.774-777.
- Sangalli, L.M., Secchi, P., Vantini, S. (2014): "Rejoinder: Analysis of AneuRisk65 data", *Electronic Journal of Statistics*, Vol. 8(2), pp. 1937-1939.
- Sangalli, L.M., Secchi, P., Vantini, S. (2014): "Analysis of AneuRisk65 data: K-mean Alignment" *Electronic Journal of Statistics*, Vol. 8(2), pp. 1891-1904.
- Sangalli, L.M., Secchi, P., Vantini, S. (2014): "AneuRisk65: a dataset of three-dimensional cerebral vascular geometries" *Electronic Journal of Statistics*, Vol. 8(2), pp. 1879-1890.

- Bernardi, M., Sangalli, L.M., Secchi, P., Vantini, S. (2014):
"Analysis of Juggling Data: an Application of K-mean Alignment" *Electronic Journal of Statistics*, Vol. 8(2), pp. 1817-1824.
- Patriarca, M., Sangalli, L.M., Secchi, P., Vantini, S. (2014):
"Analysis of Spike Train Data: an Application of K-mean Alignment" *Electronic Journal of Statistics*, Vol. 8(2), pp. 1769-1775.
- Bernardi, M., Sangalli, L.M., Secchi, P., Vantini, S. (2014):
"Analysis of Proteomics data: Block K-mean Alignment", *Electronic Journal of Statistics*, Vol. 8(2), pp. 1714-1723.
- Dalla Rosa, M., Sangalli, L.M., Vantini, S. (2014):
"Principal Differential Analysis of the Aneurisk65 Dataset", *Advances in Data Analysis and Classification*, Vol. 8(3), pp. 287-302.
- Secchi, P., Stamm, A., Vantini, S. (2013): Inference for the Mean of Large p Small n Data: a Finite-Sample High-Dimensional Generalization of Hotelling's Theorem, *Electronic Journal of Statistics*, Vol. 7, pp. 2005–2031.
- Secchi, P., Vantini, S., Vitelli, V. (2013):
"Bagging Voronoi classifiers for clustering spatial functional data", *International Journal of Applied Earth Observation and Geoinformation*, Vol. 22, pp. 53-64
- Passerini, T., Sangalli, L. M., Vantini, S., Piccinelli, M., Bacigaluppi, S., Antiga, L., Boccardi, E., Secchi, P., Veneziani, A. (2012):
"An Integrated Statistical Investigation of Internal Carotid Arteries of Patients Affected by Cerebral Aneurysms", *Cardiovascular Engineering and Technology*, Vol. 3, pp. 26-40.
- Vantini, S. (2012):
"On the Definition of Phase and Amplitude Variability in Functional Data Analysis", *Test*, Vol.21(4), pp. 676-696.
- Di Maio, F., Secchi, P., Vantini, S., Zio, E., (2011):
"Fuzzy C-Means Clustering of Signal Functional Principal Components for Post-Processing Dynamic Scenarios of a Nuclear Power Plant Digital Instrumentation and Control System", *IEEE Transactions on Reliability*, Vol. 60, No. 2, pp. 415 - 465.
- Secchi, P., Vantini, S., Vitelli, V. (2011):
"A clustering algorithm for spatially dependent functional data", *Procedia Environmental Sciences*, Vol.7, pp. 176-181.
- Sangalli, L. M., Secchi, P., Vantini, S., Vitelli, V. (2010):
"k-mean Alignment for Curve Clustering", *Computational Statistics and Data Analysis*, Vol. 54., pp. 1219-1233.
- Sangalli, L. M., Secchi, P., Vantini, S., Vitelli, V. (2010):
"Functional clustering and alignment methods with applications", *Communications in Applied and Industrial Mathematics*, Vol.1, No.1, pp. 205-224.
- Seresini, S., Origoni, M., Caputo, L., Lillo, F., Longhi, R., Vantini, S., Paganoni, A. M., Protti, M. P. (2010):
"CD4+ T cells against human papilloma virus-18 E7 in patients with high-grade cervical lesions associate with the absence of the virus in the cervix", *Immunology*, Vol. 131(1), pp. 89-98.
- Sangalli, L.M., Secchi, P., Vantini, S., Veneziani, A. (2009):
"A case study in exploratory functional data analysis: geometrical features of the internal carotid artery", *Journal of the American Statistical Association*, Vol. 104, No. 485, pp. 37-48.
- Sangalli, L.M., Secchi, P., Vantini, S., Veneziani, A. (2009):
"Efficient estimation of three-dimensional curves and their derivatives by free-knot regression splines applied to the analysis of inner carotid artery centrelines", *Journal of the Royal Statistical Society, Ser. C, Applied Statistics*, Vol. 58, Part 3, pp. 285-306.
- Bacigaluppi, S., Passerini, T., Sangalli, L.M., Secchi, P., Vantini, S., Vele, S., Veneziani, A. (2008)
"Analysis of cerebral vascular morphologies for assessing rupture risk in cerebral aneurysms", *Journal of Biomechanics*, Vol. 41, Sup. 1., pp. S9.
- Seresini, S., Origoni, M., Lillo, F., Caputo, L., Paganoni, A.M., Vantini, S., Longhi, R., Taccagni, G., Ferrari, A., Secchi, P., Doglioni, C., Protti, M.P. (2007):
"IFN- γ Produced by Human Papilloma Virus-18 E6-Specific CD4+ T Cells Predicts the Clinical Outcome after Surgery in Patients with High-Grade Cervical Lesions" *Journal of Immunology*, Vol.179: pp. 7176-7183.

Veneziani, A., Boccardi, E., Antiga, L., Piccinelli, M., Secchi, P., Vantini, S., Passerini, T., De Luca, M., Bacigaluppi, S. (2006):
Statistical and numerical investigations of cerebral aneurysms' morphology and haemodynamics,
Journal of Biomechanics, Vol. 39, pp. S290.

Research Grants with Competitive Selection Calls

DIGISER - Digital innovation in governance and public service provision

(Dec 2020 – Dec 2021)

Role in the research project: **Co-investigator**

Funding Program: ESPON.

Funding Agency: European Commission

Partners: Politecnico di Milano, Deloitte, S-practice, Catapult.

Grant: **170k€**

Safari Njema - From informal mobility to mobility policies through big data analysis

(Mar 2019 – Mar 2021)

Role in the research project: **Principal Investigator**

Funding Program: Polisocial Award 2019.

Funding Agency: Politecnico di Milano

Partners: Politecnico di Milano, Universidade Eduardo Mondlane, Vodacom, Cuebiq, Agenzia Italiana per la cooperazione allo sviluppo.

Grant: **120k€**

COBHAM - The role of consumer behavior and heterogeneity in the integrated assessment of energy and climate policies (Aug 2014 - Jul 2019)

Role in the research project: **External Collaborator**

Funding Program: ERC Starting Grant

Funding Agency: European Commission

Partners: Politecnico di Milano,

Grant: **1.450k€**

Statistical modelling of varved lake sediment to reconstruct seasonal climate over the past 6000 years (Jan 2014 - Dec 2017)

Role in the research project: **Participant**

Funding Program: 2013 Project Research Grant - Statistics in the Empirical Sciences

Funding Agency: Vetenskapsrådet - Swedish Research Council

Partners: Umeå University, Politecnico di Milano,

Grant: **500k€**

ElectrisK (Sep 2013 - Jul 2014)

Role in the research project: **Principal Investigator**

Funding Program: Energie per la ricerca (20 winners, 320 applicants)

Funding Agency: Fondazione CRUI and Enel Foundation

Partners: Politecnico di Milano

Grant: **15k€**

Large P Small N (Nov 2011 - Dec 2013)

Role in the research project: **Principal Investigator**

Funding Program: 5 per 1000 Junior - 2010 (1st classified, 11 winners, 56 applicants)

Funding Agency: Politecnico di Milano

Partners: Politecnico di Milano, University of Rennes I, Emory University

Grant: **65k€**

Modelli numerici per il calcolo scientifico ed applicazioni avanzate (Oct 2011 - Oct 2013)

Role in the research project: **Participant**

Funding Program: PRIN 2009

Funding Agency: MIUR (Ministry of Education, University, and Research)

Partners: Politecnico di Milano, University of Milan, La Sapienza University of Rome, University of Pavia

Grant: **260k€**

Green Move (Feb 2011 - Aug 2013)

Role in the project: **Task Coordinator**

Funding Program: Fondo per la promozione di accordi istituzionali - Bando accordi istituzionali

Funding Agency: Regione Lombardia

Partners: Politecnico di Milano

Grant: **95k€** (amount pertaining to the Department of Mathematics)

MOTUS - Mobility and Tourism in Urban Scenarios (Feb 2009 - Sept 2014)

Role in the research project: **Task Coordinator**

Funding Program: Industria 2015 – Progetti di Innovazione Industriale - Bando Mobilità Sostenibile

Funding Agency: MISE (Ministry of Economic Development)

Partners: Politecnico di Milano, University of Pisa, University of Venice, University of Trento, Catholic University of Milan

Grant: **50k€** (amount pertaining to the Department of Mathematics)

Metodi numerici avanzati per il calcolo scientifico (Oct 2008 - Oct 2011)

Role in the research project: **Participant**

Funding Program: PRIN 2006

Funding Agency: MIUR (Ministry of Education, University, and Research)

Partners: Politecnico di Milano, University of Milan, University of Pavia, University of Bologna, University of Brescia

Grant: **95k€**

Participation to Research Projects Funded by Private Companies or Institutions

MAP-MM modelli e algoritmi per la mappatura della mobilità della rete metropolitana milanese (2020-2021)

Partners: Politecnico di Milano, ATM

Contractor: ATM

Sviluppo di una metodologia di analisi della domanda di mobilità e analisi delle ricadute sul modello di servizio di Trenord (2019)

Partners: Politecnico di Milano, Vodafone, Trenord.

Contractor: Trenord

Accordo di collaborazione tra Regione Lombardia e Politecnico di Milano per la definizione di criteri e linee guida per la manutenzione e gestione delle infrastrutture viarie (2019 - 2020)

Partners: Politecnico di Milano

Contractor: Regione Lombardia

Accordo Attuativo ASI-POLIMI Attività di Ricerca e Innovazione (2018-2032)

Partners: Politecnico di Milano, Agenzia Spaziale Italiana

Contractor: ATM

Valutazione dell'incertezza relativa alla stima della massa di legname immessa in un impianto di produzione (May 2017)

Partners: Politecnico di Milano

Contractor: Shelter

Contract Value: **1k€**

Sviluppo di modelli statistici nell'ambito dell'analisi di dati funzionali per lo studio dei pattern di funzionamento di impianti e reti elettriche (Dic 2016 – Oct 2020)

Partners: Politecnico di Milano

Contractor: ABB

Contract Value: **130k€**

Sviluppo di modelli fisici e computazionali per Cyber Tyre 2 (Nov 2016 – Apr 2017)

Partners: Politecnico di Milano

Contractor: Pirelli Tyre

Contract Value: **80k€**

Telecom Italia (Feb 2016 – Jan 2016)

Partners: Politecnico di Milano

Contractor: Telecom Italia

Contract Value: **in kind**

Predictive System for Decision Making (Dec 2016 – May 2017)

Partners: Politecnico di Milano

Contractor: Accenture

Contract Value: **36k€**

Sviluppo di modelli previsionali a supporto della compravendita di autoveicoli

(Nov 2016 – Dec 2016)

Partners: Politecnico di Milano

Contractor: Brumbrum

Contract Value: **15k€**

Sviluppo di modelli fisici e computazionali per Cyber Tyre (Mar 2016 – Oct 2016)

Partners: Politecnico di Milano

Contractor: Pirelli Tyre

Contract Value: **80k€**

Progetto per una rete nazionale a supporto della mobilità elettrica (Apr 2016 – Jul 2016)

Partners: Politecnico di Milano

Contractor: Enel

Contract Value: **200k€**

Classificazione di immagini fotografiche per il riconoscimento automatico della presenza di bolle d'aria in una siringa (Jan 2016 – Apr 2016)

Partners: Politecnico di Milano

Contractor: Thermofisher

Contract Value: **12k€**

Studio e sviluppo di innovativi algoritmi di source separation (Sep 2015 – Dic 2015)

Partners: Politecnico di Milano, Moxoff

Contractor: Geolog

Contract Value: **5k€** (amount pertaining to the Department of Mathematics)

Analisi geostatistica per il monitoraggio ambientale di piattaforma offshore (Apr 2015)

Partners: Politecnico di Milano

Contractor: Shelter

Contract Value: **4k€** (amount pertaining to the Department of Mathematics)

Eni ITA-Read (Jul 2014 - Oct 2014)

Partners: Politecnico di Milano, Eni Exploration & Production

Contractor: Eni Exploration & Production

Contract Value: **70k€** (amount pertaining to the Department of Mathematics)

Predictive Models for Supply and Demand Curves in Markets with Daily Variation
(Oct 2012 - Dec 2012)

Partners: Politecnico di Milano

Contractor: Moxoff

Contract Value: **5k€** (amount pertaining to the Department of Mathematics)

Eni Corporate Reputational Risk (Sep 2012 - Mar 2014)

Partners: Politecnico di Milano, Eni Exploration & Production

Contractor: Eni Exploration & Production

Contract Value: **30k€** (amount pertaining to the Department of Mathematics)

Eni Production Allocation (Jul 2012 - Jun 2014)

Partners: Politecnico di Milano, Eni Exploration & Production

Contractor: Eni Exploration & Production

Contract Value: **200k€** (amount pertaining to the Department of Mathematics)

Eni Production Allocation - Feasibility Study (Oct 2011 - Dec 2011)

Partners: Politecnico di Milano, Eni Exploration & Production

Contractor: Eni Exploration & Production

Contract Value: **20k€** (amount pertaining to the Department of Mathematics)

Progetto Edison GasRisk2 (Apr 2011 - Sep 2011)

Partners: Politecnico di Milano, Moxoff, Edison

Contractor: Edison

Contract Value: **20k€** (amount pertaining to the Department of Mathematics)

Eni Microseepage 2 (Jan 2011 - Dec 2011)

Partners: Politecnico di Milano, Eni Exploration & Production

Contractor: Eni Exploration & Production

Contract Value: **100k€** (amount pertaining to Politecnico di Milano)

Progetto Edison GasRisk (Nov 2010 - Mar 2011)

Partners: Politecnico di Milano, Moxoff, Edison

Contractor: Edison

Contract Value: **15k€** (amount pertaining to the Department of Mathematics)

Eni Microseepage (Oct 2008 - Sep 2010)

Partners: Politecnico di Milano, Eni Exploration & Production

Contractor: Eni Exploration & Production

Contract Value: **425k€** (amount pertaining to Politecnico di Milano)

Interruzioni prolungate o estese: Nuovi standard di qualità con indennizzi automatici in vigore dal terzo periodo di regolazione 2008-11 (Jan 2007 - Mar 2007)

Partners: Politecnico di Milano, Authority per l'Energia Elettrica e il Gas

Contractor: Authority per l'Energia Elettrica e il Gas

Contract Value: **50k€** (amount pertaining to the Department of Mathematics)

Definizione di una metodologia per l'attribuzione di un profilo di rischio utile per la valutazione dell'adeguatezza degli investimenti finanziari della clientela delle Banche del gruppo CRFirenze (Sep 2005 - Nov 2005)

Partners: Politecnico di Milano, Cassa di Risparmio di Firenze

Contractor: Infogroup

Contract Value: **10k€** (amount pertaining to the Department of Mathematics)

Aneurisk (Jan 2005 - Dec 2007)

Partners: Politecnico di Milano, Mario Negri Institute for Pharmacological Researches - Villa

Camozzi, Niguarda Ca'Granda Hospital - Milano, Ospedale Maggiore Policlinico - Milano

Contractor: Siemens Medical Solutions Italia and Fondazione Politecnico di Milano

Contract Value: **140k€** (amount pertaining to the Department of Mathematics)

**Advisor
for International Institutions**

International Atomic Energy Agency

Consultants Meeting on Developments of Power Reactor Information System, September 17-19, 2013, Vienna (Austria).

Commissions of Trust

Feb 2020

Member of the PhD Defence Committee of the PhD program in PhD in Statistics, XXXII cycle, La Sapienza University of Rome, Italy.

January 2018 - present

Member of the transdisciplinary group data@ter – data from/for territory at Politecnico di Milano

June 2017 - present

Member of the management board of the interdepartmental laboratory VClab at Politecnico di Milano

May 2018 - present

Member of the board of the PhD program in Data Analytics and Decision Sciences at Politecnico di Milano

Jan 2018 - present

Member of the scientific and management board of the group "Statistics and Data Science" of the Italian Statistical Society (SIS)

Sep 2017 - present

Member of the board of the MSc program in Information and Communication Design at Politecnico di Milano

Sep 2016 - present

Member of the board of the MSc program in Mathematical Engineering at Politecnico di Milano

Dec 2015 - present

Member of the management committee of the inter-departmental laboratory "Urbanscope" at Politecnico di Milano

Mar 2012 - present

Member of the board of the Bachelor program in Management Engineering at Politecnico di Milano

Awards

Group award. Finlaist of the "Switch2product 2020" competition with the project The Flowcatcher (Dec 2019).

Group award. Winner of the "Polisocial awards 2019" competition with the project Safari Njema (Dec 2018).

Front Cover of *Lettera Matematica Pristem*, Vol. 93 (Jun 2015),
for the manuscript: Ieva, F., Secchi, P., Vantini, S. (2015): "Big data: the next challenge for statistics",
Lettera Matematica, Vol. 3(3), pp. 111-120

Selected as **testimonial** of "Mathesia - The land where math creates innovation"
(www.mathesia.com) (Dec 2014)

Personal award from Dept. of Mathematics - Politecnico di Milano (Jul 2014):
"Premio Giovani Ricercatori 2013".

Personal award from Fondazione CRUI and Enel Foundation (Jul 2013)
"Premio Energie per la Ricerca" (20 winners, 320 applicants)

Group award to the Hard Math Café Team (Nov 2012):
"Best Experience in Science Transfer - First Edition", 1st classified.
Mention for the best activity of the project Meet Me Tonight.

Front Cover of *Cardiovascular Engineering and Technology*, Vol. 3, Nr. 1, (Mar 2012),
for the manuscript: Passerini, T., Sangalli, L. M., Vantini, S., Piccinelli, M., Bacigaluppi, S., Antiga, L.,
Boccardi, E., Secchi, P., Veneziani, A. (2012): "An Integrated Statistical Investigation of Internal
Carotid Arteries of Patients Affected by Cerebral Aneurysms", *Cardiovascular Engineering and
Technology*, Vol. 3, pp. 26-40.

Front Cover of *Communications in Applied and Industrial Mathematics (CAIM)*, Vol.2, Nr. 2, (2011),
for the manuscript: Sangalli, L. M., Secchi, P., Vantini, S., Vitelli, V. (2010):
"Functional clustering and alignment methods with applications", *Communications in Applied and
Industrial Mathematics*, Vol.1, No.1, pp. 205-224.

Personal award from Politecnico di Milano (Oct 2010)
"5x1000 Junior 2010" (1st classified, 11 winners, 56 applicants) received.

Personal award by Dept. of Mathematics - Politecnico di Milano (Oct 2008):
"Premio Giovani Ricercatori 2008".

Fellowships

Post-doctoral Fellowship by Dept. of Mathematics - Politecnico di Milano (Apr 2008):
"Modelli e metodi per la classificazione e la regressione di dati funzionali (Models and Methods for
Classification and Regression of Functional Data)".

PhD Fellowship by Siemens Medical Solutions and Fondazione Politecnico di Milano (Mar 2005):
"Strumenti statistici e numerici per la valutazione dei rischi di rottura negli aneurismi cerebrali
(Statistical and Numerical Tools for Cerebral Aneurysm Rupture Risk Evaluation)"

Conference Organization

Member of the scientific and organizing committee of "DS2 2020 – Statistics for Data Science and
Artificial Intelligence", September 10-11, 2020, Milan (Italy).

Member of the scientific committee of the "IWFOs 2020 – International workshop of functional and
operatorial statistics", June 24-27, 2020, Brno (Czech Republic).

Member of the scientific committee of the meeting of the Italian Statistical Society "SIS 2020",
June 22-24, 2020, Pisa (Italy).

Member of the organizing committee of the meeting of the Italian Statistical Society "SIS 2019 -
Smart Statistics for Smart Applications", June 18-21, 2019, Milan (Italy).

Member of the organizing committee of "IWFOs 2014 Third International Workshop on Functional
and Operatorial Statistics", June 19-21, 2014, Stresa (Italy).

Member of the organizing committee of "S.Co. 2013 Complex Models and Computational Intensive
Methods for Estimation and Prediction", September 9-11, 2013, Milan (Italy).

Member of the scientific and organizing committee of the Competition and Barcamp "Technology
Foresight and Statistics for the Future", September 12, 2013, Milan (Italy).

Member of the organizing committee of "S.Co. 2009 Complex Models and Computational Intensive
Methods for Estimation and Prediction", September 14-16, 2009, Milan (Italy).

Refereeing Activity

Reviewer for international journals: Journal of the American Statistical Association, Journal of the Royal Statistical Society, Journal of Multivariate Analysis, Computational Statistics and Data Analysis, Statistica Sinica, Communications in Statistics, Pattern Recognition Letters, Biometrika, Advances in Data Analysis and Classification.

Referee of the PhD thesis of A. Caponera (2020): “Statistical Inference for Spherical Functional Autoregressions”, PhD in Statistical Sciences, XXXII cycle, La Sapienza University of Rome, Italy.

Referee of the PhD thesis of S. N. Mousavi (2016): “Analysis of Functional Data with Focus on Multinomial Regression and Multilevel Data”, PhD in Mathematics, University of Copenhagen, Denmark.

Referee of the PhD thesis of G. M. Venturini (2015): “Statistical Distances and Probability Metrics for Multivariate Data, Ensembles and Probability Distributions”, PhD in Statistics, Universidad Carlos III de Madrid, Spain.

Referee of several MSc theses in Mathematical Engineering and Energy Engineering at Politecnico di Milano.

Post-doc Fellow Supervision

M. Fontana, **Postdoc fellow** at Dept. of Mathematics - Politecnico di Milano: Nonparametric predictive inference for Complex data.

A. Stamm, **Postdoc fellow** at Dept. of Mathematics - Politecnico di Milano: Inference for Hidden Highdimensional Complex data.

A. Pini, **Postdoc fellow** at Dept. of Mathematics - Politecnico di Milano: Permutational Inference for Functional Data.

P. Zanini, **Postdoc fellow** at Dept. of Mathematics - Politecnico di Milano: Statistical methods for the analysis of the temporal evolution of spatially- located functional and multivariate data.

M. Fiasché, **Postdoc fellow** at Dept. of Mathematics - Politecnico di Milano: Deconvolution of geo-referenced vectorial and functional random signal.

Phd Thesis Supervision

Supervisor of M. Landrò, PhD in Data Analytics and Decision Sciences XXXVI cycle, Politecnico di Milano.

Supervisor of J. Diquigiovanni, PhD in Statistical Sciences XXXIV cycle, University of Padua.

Supervisor of A. Calissano, PhD in Mathematical Models and Methods for Engineering XXXIII cycle, Politecnico di Milano. Supervisor: S. Vantini.

Supervisor of E. Belli, PhD in Mathematical Models and Methods for Engineering XXXIII cycle, Politecnico di Milano. Supervisor: S. Vantini.

Supervisor of J. Di Iorio, PhD in Mathematical Models and Methods for Engineering XXXII cycle, Politecnico di Milano. Supervisor: S. Vantini.

Supervisor of I. Lovato, PhD in Mathematics XXXI cycle, University of Pavia. Supervisor: S. Vantini. Co-supervisor: A. Pini, A. Stamm.

Supervisor of R. Pascuzzo, PhD in Mathematical Models and Methods for Engineering XXX cycle, Politecnico di Milano. Supervisor: S. Vantini.

Supervisor of A. Pini: “Global and component-wise distribution-free inference for functional data: methods and applications”, PhD in Mathematical Models and Methods for Engineering XXVII cycle, Politecnico di Milano. Supervisor: S. Vantini.

Phd Thesis Co-supervision

Co-supervisor of F. Centofanti, PhD in Industrial Engineering XXXIV cycle, University of Naples Federico II. Supervisor: B. Palumbo. Co-supervisor: S. Vantini

Co-supervisor of M. Galvani, PhD in Mathematics and Statistics XXXIII cycle, University of Pavia. Supervisor: S. Figini. Co-supervisor: S. Vantini

Co-supervisor of M. Izzo, PhD in Urban Planning, Design, and Policies XXXVI cycle, Politecnico di Milano. Supervisor: V. Fedeli. Co-supervisor: S. Vantini

Co-supervisor of N. A. L. Olsen, PhD in Mathematics, University of Copenhagen. Supervisor: B. Markussen. Co-supervisor: A. Rønn-Nielsen, S. Vantini.

Co-supervisor of M. Fontana, PhD in Management Engineering XXXII cycle, Politecnico di Milano. Supervisor: M. Tavoni. Co-supervisor: S. Vantini.

Co-supervisor of M. Cremona: "Statistical methods for omics data", PhD in Mathematical Models and Methods for Engineering XXVIII cycle, Politecnico di Milano. Supervisor: P. Secchi. Co-supervisor: L. M. Sangalli, S. Vantini.

Co-supervisor of P. Zanini: "Blind Source Separation methods for high-dimensional, massive, and complex data", PhD in Mathematical Models and Methods for Engineering XXVI cycle, Politecnico di Milano. Supervisor: P. Secchi. Co-supervisor: S. Vantini.

Co-supervisor of V. Vitelli: "Classification of Functional Data in the presence of Spatial Dependence Methods, Algorithms and Case Studies", PhD in Mathematical Models and Methods for Engineering XXIV cycle, Politecnico di Milano. Supervisor: P. Secchi. Co-supervisor: S. Vantini.

Post-MSc Fellow Supervision

G. Zeni, **Post-MSc research fellow** at Dept. of Mathematics - Politecnico di Milano: Object-oriented Data Analysis of Mobility Networks.

A. Mascaretti, **Post-MSc research** at Dept. of Mathematics - Politecnico di Milano: Object-oriented Data Analysis of Mobility Networks.

A. Calissano, **Post-MSc research** at Dept. of Mathematics - Politecnico di Milano: Mobility and Urban Data.

MSc Thesis Supervision and Co-supervision

Supervisor and Co-supervisor of 49 MSc theses in Mathematical Engineering (Dalla Rosa M., Stamm A., Boneschi A., Vecchio C., Juramy M., Antonini M., Cardazzi C., Bernardi M., Binda R., Patriarca M., Riabiz M., Belloni C., Chinello F., Ferrara L., Ghiazza F., Satta M., Giorgio G., Serafini A., Giarratano E., Assi R., Di Iorio J., Calissano A., Mignogna R., Passarotto F., Passamonti F., Crippa V., Martarelli M., Lambin M., Facchetti L., Candiani G., Cimini M., Gandolfi F., Rota L., Battagliola M.L., Galmiche J., Castellini M., Castelnovo S., Ghidelli M., Torti A., Tornetti S.), in Management Engineering (Cova A., Sert S., Cazzaniga N., d'Ettola S., Scaravelli, M., Fontana M., Robbiani A. Diaz M.), and in Mechanical Engineering (Ferrante, R.) at Politecnico di Milano.

Teaching (MSc Courses)

Course name: "Nonparametric Statistics",
Master Degree in Mathematical Engineering, Politecnico di Milano,
AcYrs: 2020/21.

Course name: "Statistical and Mathematical Modeling and Optimization",
Master Degree in Mobility Engineering, Politecnico di Milano,
AcYrs: 2020/21.

Course name: "Final Synthesis Design Studio (Data-driven)",
Master Degree in Information and Communication Design, Politecnico di Milano,
AcYrs: 2017/18, 2018/19, 2019/20, 2020/21..

Course name: "Numerical and Statistical Methods in Geosciences",
Master Degree in Mathematical Engineering, Politecnico di Milano,
AcYrs: 2016/17, 2017/18, 2018/19.

Course name: "Applied Statistics" exercise class,
Master Degree in Mathematical Engineering, Politecnico di Milano,
AcYrs: 2005/06, 2006/07, 2007/08, 2008/09, 2009/10, 2010/11, 2011/12, 2012/13, 2013/14.

Course name: "Applied Statistics" exercise class,
Master Degree in Management Engineering, Politecnico di Milano,
AcYrs: 2010/11.

Course name: "Bayesian Statistics" exercise class,
Master Degree in Mathematical Engineering, Politecnico di Milano,
AcYrs: 2009/10.

Teaching (Bachelor Courses)

Course name: "Statistics",
Bachelor in Mathematical Engineering, Politecnico di Milano,
AcYrs: 2017/18, 2018/19, 2019/20, 2020/21..

Course name: "Probability and Mathematical Statistics",
Bachelor in Management Engineering, Politecnico di Milano,
AcYrs: 2012/13, 2013/14, 2014/15, 2015/16, 2016/17, 2017/18, 2018/19, 2019/20.

Course name: "Mathematical Statistics A" exercise class,
Bachelor in Energy Engineering, Politecnico di Milano,
AcYrs: 2005/06, 2006/07, 2007/08.

Course name: "Mathematical Statistics A" laboratory class,
Bachelor in Energy Engineering, Politecnico di Milano,
AcYrs: 2005/06, 2006/07, 2007/08.

Course name: "Statistics" laboratory tutoring,
Bachelor in Mathematical Engineering and Bachelor Physical Engineering, Politecnico di Milano,
AcYrs: 2006/07, 2007/08.

Educational Activities

Meet me Tonight - Notte dei Ricercatori 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020..

Summer School - Politecnico di Milano, 2012, Politecnico di Milano

Computer skills and competences

Operating systems	Linux, Mac, Windows
Statistical software	Excel, R, Phytion
Programming languages	C, C++, Matlab, R, Python

Language skills and competences

Mother tongue(s)	Italian				
Other language(s)	Understanding		Speaking		Writing
Self-assessment	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
French	A2	B1	A2	A2	A2

(* Common European Framework of Reference for Languages: A1 (min), A2, B1, B2, C1, C2 (max).