

Federico Ferraccioli | CV

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Current position

Assistant professor (RTD-a)

Department of Statistical Sciences, University of Padova

Mar. 2023 - present

Previous positions

Scientific Officer (PostDoc) - Statistician

Joint Research Centre, European Commission
Centre for advanced studies - EPICO project

Jan. 2022 - Feb. 2023

Post-Doctoral research fellow

Department of Statistical Sciences, University of Padova
Supervisor : Giovanna Menardi

Nov. 2019 - Nov. 2021

Education

Ph.D. in Statistics

Department of Statistical Sciences, University of Padova
Title : "Nonparametric methods for complex spatial domains: density estimation and hypothesis testing."
Supervisor : Laura M. Sangalli, Livio Finos.

Oct. 2016 - Sep. 2019

Master degree in Statistical Sciences

Department of Statistical Sciences, University of Padova
Title : "Topic modeling, behind the scenes: directed and undirected graphical models."
Supervisor : Livio Finos. Final grade : 110/110 cum laude

Oct. 2014 - Sep. 2016

Bachelor degree in Statistical Sciences

Department of Statistical Sciences, University of Padova
Title : "Topic model workout: un approccio per l'analisi di microblogging, mass media e dintorni."
Supervisor : Livio Finos. Final grade : 106/110

Oct. 2011 - Jul. 2014

Visiting periods

Visiting for collaboration with Prof. Vladimir Veliov

TU Wien

April 2022

Visiting scholar under the supervision of Prof. Laura M. Sangalli

MOX - Politecnico di Milano

Oct 2018 - Sep 2019

Visiting scholar under the supervision of Prof. Nils Lid Hjort

University of Oslo

Mar 2018 - May 2018

Visiting scholar under the supervision of Prof. Laura M. Sangalli

MOX - Politecnico di Milano

Oct 2017

ASN & Awards

- o National Qualification for Associate Professor (ASN II fascia) in Statistics - Settore concorsuale 13/D1) (obtained in December 2023)
- o Best Ph.D. Thesis in Statistics (mention of merit), "Premio per la migliore Tesi di Dottorato di ricerca in Statistica", Italian Statistical Society (2022).
- o Best paper, "Premio alla ricerca 2020", Department of Statistical Sciences, University of Padova (2021).
- o Winner of "3 minute PhD thesis competition", Department of Statistical Sciences, University of Padova (2019).

Publications

Refereed journals.....

- o **Ferraccioli, F.**, Riccetti, N., Fasano, A., Stilianakis, N.I. (2023) The effect of multiple climate and environmental factors on mosquito population in Greece: a Bayesian spatio-temporal approach. *Nature Scientific Reports*. DOI: 10.1038/s41598-023-45666-3.
- o Riccetti, N., **Ferraccioli, F.**, Fasano, A., Stilianakis, N.I. (2023) Demographic characteristics associated with West Nile virus neuroinvasive disease – A retrospective study on the wider European area 2006-2021. *PLOS One*. DOI:10.1371/journal.pone.0292187.
- o **Ferraccioli, F.**, Sangalli, L. M., Finos, L. (2022). Nonparametric tests for semiparametric regression models. *TEST*. DOI 10.1007/s11749-023-00868-9.
- o Fasano, A., Riccetti, N., Angelou, A., Gomez-Ramirez, J., **Ferraccioli, F.**, Kioutsoukis, I, Stilianakis, N. I. (2022). An epidemiological model for mosquito host selection and temperature dependent transmission of West Nile virus. *Nature Scientific Reports*. DOI: 10.1038/s41598-022-24527-5.
- o Riccetti, N., Fasano, A., **Ferraccioli, F.**, Gomez-Ramirez, J., Stilianakis, N. I. (2022). Host selection and forage ratio in West Nile virus–transmitting *Culex* mosquitoes: Challenges and knowledge gaps. *PLOS Neglected Tropical Diseases*, 16(10), e0010819.
- o **Ferraccioli, F.**, Menardi, G. (2022). Modal clustering of matrix-variate data. *Advances in Data Analysis and Classification*. DOI: 10.1007/s11634-022-00501-x.
- o Arnone, E., **Ferraccioli, F.**, Pigolotti, C., Sangalli, L. M. (2021). A roughness penalty approach to estimate densities over two-dimensional manifolds. *Computational Statistics and Data Analysis*. DOI: 10.1016/j.csda.2022.107527.
- o Frizzarin, M., Bevilacqua, A., Dhariyal, B., Domijan, K., **Ferraccioli, F.**, Hayes, E., ... & Casa, A. (2021). Mid infrared spectroscopy and milk quality traits: a data analysis competition at the "International Workshop on Spectroscopy and Chemometrics 2021". DOI:10.1016/j.chemolab.2021.104442.
- o **Ferraccioli, F.**, Sangalli, L. M., Finos, L. (2021). Some first inferential tools for spatial regression with differential regularization. *Journal of Multivariate Analysis*. DOI: 10.1016/j.jmva.2021.104866.
- o **Ferraccioli, F.**, Arnone, E., Finos, L., Ramsay, J.O., Sangalli, L.M. (2021), Nonparametric density estimation over complicated domains, *Journal of the Royal Statistical Society Ser. B, Statistical Methodology*, 83, 346-368.
- o Matozzo, V., Fabrello, J., Masiero, L., **Ferraccioli, F.**, Finos, L., Pastore, P., Bogianni, S. (2018). Ecotoxicological risk assessment for the herbicide glyphosate to non-target aquatic species: A case study with the mussel *Mytilus galloprovincialis*. *Environmental Pollution*, 233, 623-632.

Conference Proceedings.....

- o Cavazzutti, M., Arnone, E., **Ferraccioli, F.**, Finos, L., Galimberti, C., Sangalli, L.M. (2023). Sign-Flip tests for the nonparametric component in Spatial Regression with PDE regularization. Proceedings of the GRASPA 2023 Conference. ISBN: 9791221033892.
- o Cavazzutti, M., Arnone, E., **Ferraccioli, F.**, Finos, L., Sangalli, L.M. (2023). Sign-Flip tests for Spatial Regression with PDE regularization. In: Proceedings of "Statistics and Data Science Conference". ISBN: 978-88-6952-170-6
- o **Ferraccioli, F.**, Casa A., Stefanucci M. (2022). Trend filtering for functional regression, SIS 2022 - ISBN 9788891932310 .
- o **Ferraccioli, F.**, Menardi, G. (2021). On testing the significance of a mode. Book of Short Papers, SIS 2021 - ISBN 9788891927361.
- o Menardi, G., Costantin, D., **Ferraccioli, F.** (2020). Identification of high-energy γ -ray sources via nonparametric clustering. Book of Short Papers, SIS 2020 - ISBN:9788891910776.
- o **Ferraccioli, F.**, Menardi, G. (2020). A modal approach for clustering matrices. Book of Short Papers, SIS 2020 - ISBN:9788891910776.
- o **Ferraccioli, F.**, Sciandra, A., Da Pont, M., Girardi, P., Solari, D., Finos, L. (2020). TextWiller SardiStance, HaSpeede2: Text or Con-text? A smart use of social network data in predicting polarization. Proceedings of the 7th Evaluation Campaign of Natural Language Processing and Speech Tools for Italian (EVALITA 2020). CEUR-WS. org. DOI : 10.4000/books.aaccademia.6732.
- o **Ferraccioli, F.**, Sangalli, L.M., Arnone, E., Finos, L. (2019) Nonparametric Likelihood Density Estimation on Bounded Domains. Book of Abstracts, EMS 2019, Palermo.
- o **Ferraccioli, F.**, Sangalli, L.M., Finos, L. (2019) Analysis of Data Over Complex Regions. Book of Abstract, GRASPA 2019, Pescara. ISBN: 978-88-97413-34-9.
- o **Ferraccioli, F.**, Sangalli, L.M., Finos, L. (2019) Bounded Domain Density Estimation. Book of Short Papers, SIS 2019, Milano. ISBN: 978889191510.
- o Finos, L., Hemerik, J., **Ferraccioli, F.**, Sangalli, L.M., Goeman, J.J. (2018) Robust testing of generalized spatial regression models by conditional score test. Book of Abstracts, ISNPS 2018, Salerno. ISBN:978-88-61970-00-7.
- o **Ferraccioli, F.**, Sangalli, L.M., Finos, L. (2018) Density estimation via nonparametric penalized likelihood. Book of Abstracts, ISNPS 2018. ISBN:978-88-61970-00-7.
- o **Ferraccioli, F.**, Sangalli, L. M., Finos, L. (2018). Nonparametric penalized likelihood for density estimation. Book of short papers, SIS 2018, Palermo. ISBN: 9788891910233.
- o **Ferraccioli, F.**, Finos, L. (2017). Exponential family graphical models and penalizations. Book of short papers, SIS 2017, Firenze. ISBN: 978-88-6453-521-0.

Book Chapters and Discussions.....

- o **Ferraccioli, F.**, Sangalli, L.M., Arnone, E., Finos, L. (2020). A Functional Data Analysis Approach to the Estimation of Densities over Complex Regions. International Workshop on Functional and Operatorial Statistics, 77-82. Springer, Cham.
- o Cappozzo, A., **Ferraccioli, F.**, Stefanucci, M., Secchi, P. (2017). An Object Oriented Approach to Multimodal Imaging Data in Neuroscience. Studies in Neural Data Science, Springer Volume 'Proceedings in Mathematics & Statistics', ISBN-9783030000394.

Manuscripts Under Review and In Preparation.....

- o **Ferraccioli, F.**, Casa, A., Stefanucci, M. (2023) An adaptive functional regression framework for spatially heterogeneous signals in spectroscopy. arXiv:2309.06999 [Submitted]
- o Cavazzutti, M., Arnone, E., **Ferraccioli, F.**, Galimberti, C., Finos, L., Sangalli, L.M. (2023).

- Sign-Flip inference for spatial regression with differential regularization. [Submitted]
- **Ferraccioli, F.**, Stilianakis, N.I., Veliov, V.M. A spatial epidemiological model with contact and mobility restrictions. [Submitted]
- Pacheco-Fuentes, H., Ton, R., Crino, O. L., **Ferraccioli, F.**, Cooper, C. E., Griffith, S. C. (2023) Mitochondrial metabolism responds differently to experimental heatwaves in two finch subspecies. [submitted]
- **Ferraccioli, F.**, Menardi, G. Stochastic inference for density modes. [Manuscript in preparation]

PhD Thesis

- Ferraccioli, F. (2020). Nonparametric methods for complex spatial domains: density estimation and hypothesis testing.

Presentations

Invited Seminars

- IR Spectroscopy Group Meeting - University College Dublin (2022).
- MOX seminars, MOX - Politecnico di Milano (2021).
- Premio alla ricerca 2020 - University of Padova (2021).
- Working Group on Statistical Learning (online) - University College Dublin (2021).
- MOX seminars, MOX - Politecnico di Milano (2019).
- FocuStat Seminar - University of Oslo (2018).

Invited Presentations

- CMStatistics 2022 - King's College London (2022).
- GRASPA - Italian research group for Environmental Statistics, Pescara (2019).
- ISA Workshop - Frontiers in Functional Data Analysis, University College Dublin (2018).

Contributed Presentations

- SIS - 51-st Scientific meeting of the Italian Statistical Society, University of Caserta (2022).
- SIS - 50-th Scientific meeting of the Italian Statistical Society (online), University of Pisa (2021).
- EMS - European Meeting of Statisticians, University of Palermo (2019).
- SIS - Intermediate conference of the Italian Statistical Society, University of Milano-Cattolica (2019).
- SIS - 49-th Scientific meeting of the Italian Statistical Society, University of Palermo (2018).
- ISNPS - 4-th Conference of the International Society for Nonparametric Statistics, Salerno (2018).
- SIS - Intermediate conference of the Italian Statistical Society, University of Firenze (2017).

Teaching and supervision experience

Teaching

- Lecturer (40 hours), Statistica applicata per la biologia evuzionistica, Master degree in Evolutionary Biology, Università degli Studi di Padova (Academic year 2023/ 2024).
- Teaching assistant (36 hours), Statistica 2, Bachelor degree in Statistics, Università degli Studi di Padova (Academic year 2023/ 2024).
- Teaching assistant (32 hours), Matematica e Statistica. Bachelor degree in Biotechnologies, Università degli Studi di Padova (Academic year 2022/ 2023).
- Teaching assistant (22 hours), Modelli Statistici 1 (laboratorio R). Bachelor degree in Statistics, Università degli Studi di Padova (Academic year 2022/ 2023).

- o Lecturer (8 hours), Statistics (module 2). Ph.D. Course in Neuroscience, Università degli Studi di Padova (Academic year 2022/ 2023).
- o Teaching assistant (28 hours), Statistica 2. Bachelor degree in Statistics, Università degli Studi di Padova (Academic year 2021/ 2022).
- o Specialist Lecture, Classification Models for Text Mining. Statistica Iterazione. Master degree in Statistics, Università degli Studi di Padova. (Academic year 2020/ 2021).
- o Teaching assistant (18 hours), Testing Psicologico (Laboratorio R). Bachelor degree in Psychology, Università degli Studi di Padova (Academic year 2020/ 2021).
- o Teaching assistant (28 hours), Statistica 2. Bachelor degree in Statistics, Università degli Studi di Padova (Academic year 2020/ 2021).
- o Specialist Lecture, Classification Models for Text Mining. Statistica Iterazione. Master degree in Statistics, Università degli Studi di Padova. (Academic year 2019/ 2020).
- o Teaching assistant (28 hours), Statistica 2. Bachelor degree in Statistics, Università degli Studi di Padova (Academic year 2019/ 2020).
- o Specialist Lecture, Classification Models for Text Mining. Statistica Iterazione. Master degree in Statistics, Università degli Studi di Padova. (Academic year 2018/ 2019).

Supervision

- o MSc Thesis co-supervision: Elisa Colorio (Università di Padova, 2023/24, supervisor : Livio Finos)
- o MSc Thesis co-supervision: Lorenzo Cavazzuti (Politecnico di Milano, 2021/22, supervisor : Laura M. Sangalli)
- o MSc Thesis co-supervision: Cristina Galimberti (Politecnico di Milano, 2021/22, supervisor : Laura M. Sangalli)
- o MSc Thesis co-supervision: Clara Pigolotti (Politecnico di Milano, 2018/19, supervisor : Laura M. Sangalli)

Skills

Languages

Italian (Native) • English (Proficient)

Programming languages

R (Advanced) • Python • Matlab • SQL • C/C++ • Stata • SAS

Service to profession

Referee for

Annals of Statistics • Computational Statistics • Computational Statistics & Data Analysis • Statistics & Computing • Spatial Statistics • Stat • Statistical Methods & Applications • Plos One

Reviewer for

N-SERC Discovery Grant

Service to university

- o Member of the orientation committee, Department of Statistical Sciences, University of Padova (2023 - ongoing)
- o Elected representative of Ph.D. students and Postdoctoral researchers in the Faculty Board (University of Padova, 2016-2020)

Organization of Scientific Events.....

- o Session organizer for the JRC Science Summit, JRC Ispra - European Commission (June 2022, hybrid)

Membership.....

- o Societa Italiana di Statistica (SIS)

Other activities

Outreach.....

Organizer of Stat4Business

Università di Padova

May 2024

A day of meeting and exchanging experiences between those who deal with statistics and data science in companies, services, industry, consultancy and marketing.

Organizer of StatDataCamp

Università di Padova (held in Bressanone)

September 2023

A free residential camp in which students develop and analyse complex data, managing every phase of the process, from the initial dataset to the presentation of the results. Participants are supported by teaching tutors, follow thematic seminars with experts from various disciplines and work in groups to develop their own project.

Working experience.....

Internship

MyS S.r.l, business intelligence and consulting company

Jun 2009 – Aug 2009

Internship

MyS S.r.l, business intelligence and consulting company

Jun 2008 – Aug 2008

External collaborations.....

Statistical analysis and consulting

Ospedale di Rovigo - Théa Farma SpA

Jun 2018 – Lug 2018

Statistical analysis and epidemiological study for dry eyes patients

Competitions.....

International Workshop on Spectroscopy and Chemometrics

(winner)

University College Dublin, Dublin (online)

2021

Data analysis competition on spectroscopy data devoted to the development of applications and statistical tools used in food science and agriculture.

Start Up research - Follow Up

University of Palermo, Palermo

2018

Follow up meeting where the research groups present and discuss the scientific output of their works after one year of research.

Start Up research

Certosa di Pontignano, Siena

2017

Research group experience with a senior researcher with the aim of developing innovative methods and models to analyze a data from the Neurosciences.

Stats Under the Stars 3

University of Firenze, Firenze

2017

Team work experience in data science competition.

Stats Under the Stars <i>Caffe Pedrocchi, Padova</i> Team work experience in data science competition.	2015
Data Science Game <i>Chateau Les Fontaines, Paris</i> Team work experience in international data science competition.	2015
Further education	
Deep Learning Specialization <i>Coursera</i>	2019
Numerical Analysis <i>SMI - Scuola Matematica Interuniversitaria</i>	2018
Commutative Algebra and Geometry <i>SMI - Scuola Matematica Interuniversitaria</i>	2018
Diploma di Contrabbasso <i>Conservatorio "F. Venezze", Rovigo</i>	2013

Contacts

Laura M. Sangalli <i>MOX - Politecnico di Milano</i>	<i>laura.sangalli@polimi.it</i>
Livio Finos <i>University of Padova</i>	<i>livio.finos@unipd.it</i>
Giovanna Menardi <i>University of Padova</i>	<i>giovanna.menardi@unipd.it</i>