

Nicoletta D'Angelo | PhD student

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My research interest is in local characteristic of spatio-temporal point processes, with applications to seismology and criminology. I also work with segmented regression, applied in higher education.

Education

PhD course in Statistics (XXXV cycle): DSEAS, UNIPA 01/11/2019–in progress
Master's Degree in Statistics (LM-82): UNIPA, First Class Honours 03/10/2017 – 18/07/2019
Bachelor's Degree in Statistics (L-41): UNIPA, First Class Honours 20/09/2014–20/07/2017
Erasmus student: Faculty of Economics, University of Ljubljana, Slovenia 09/2016–02/2017

Teaching

Teaching Assistant: Stochastic Processes (6 hours), DSEAS, UNIPA a.y. 2021/2022
Teaching Assistant: Statistics (8 hours), Dep. of Math., UNIPA a.y. 2021/2022
Tutor: Statistics, Probability theory (40 hours), The Math House, Palermo 09/2019–09/2020
Tutor: Mathematics, Statistics, Probability theory (60 hours), DSEAS, UNIPA 10/2017–05/2018

Visiting periods

- I am currently visiting professor Ottmar Cronie (since 03/04/2022) at the **Department of Mathematical Sciences, Chalmers University of Technology, Gothenburg, Sweden**, to work on local characteristics of spatio-temporal point processes with functional marks
- I have been visiting professor Jorge Mateu at the **Department of Mathematics, Universitat Jaume I, Castellon, Spain** from 15/04/2021 to 15/07/2021 to work on local methods for space-time point processes on linear networks, applied to real data in criminology and seismology

Curricular Internships

Istituto Nazionale di Geofisica e Vulcanologia: 03/2019–05/2019
Local methods and models for spatial point processes applied to seismology (150 hours)
Comune di Palermo: Analysis of sustainable well-being (200 hours) 05/2017–07/2017

Publications

Papers.....

1. Priulla, A., **D'Angelo, N.** and Attanasio, M. (2021) Analysis of the Italian university students' performance through segmented regression models: gender differences in STEM courses. *Genus* 77, 11.
2. **D'Angelo, N.**, Adelfio, G. and Mateu, J. (2021) Assessing local differences between the spatio-temporal structure of two point processes occurring on the same linear network. *Spatial Statistics*, 45, 100534.

3. Chiodi, M., Nicolis, O., Adelfio, G., **D'Angelo, N.** and González, A. (2021) ETAS Space–Time Modeling of Chile Triggered Seismicity Using Covariates: Some Preliminary Results. *Appl. Sci.* 11(19), 9143.
4. **D'Angelo, N.**, Abbruzzo, A. and Adelfio, G. (2021) Spatio-temporal spread pattern of Covid-19 in Italy. *Mathematics.* 9(19):2454.
5. **D'Angelo, N.**, Adelfio, G., Abbruzzo, A. and Mateu, J. (2022) Inhomogeneous Spatio-temporal point process on linear network for visitors' stops data. *Annals of Applied Statistics.* Accepted. <https://www.e-publications.org/ims/submission/AOAS/user/submissionFile/48832?confirm=39ab979a>
6. **D'Angelo, N.**, Siino, M., D'Alessandro, A. and Adelfio, G. (2022) Local Spatial Log-Gaussian Cox Processes for seismic data. *Advances in Statistical Analysis.* Accepted.
7. **D'Angelo, N.**, Di Benedetto, A., Adelfio, G., D'Alessandro, A. and Chiodi, M. (2022) A new picking algorithm based on the variance piecewise constant models. *SERRA Special Issue on Spatio temporal Data Science: Theoretical Advances and Applications.* Accepted
8. **D'Angelo, N.**, Payares, D., Adelfio, G. and Mateu, J. (2022) Self-exciting point processes modelling of crimes on linear networks. *Statistical Modelling.* Accepted

Proceedings.....

1. **D'Angelo, N.**, Siino, M., D'Alessandro, A. and Adelfio, G. (2020) Local LGCP estimation for spatial seismic processes. In: *Book of short papers - SIS 2020* -ISBN:9788891910776.
2. Chiodi, M. , D'Alessandro, A., Adelfio, G. and **D'Angelo, N.** . (2020) Statistical Analysis of Macroseismic Data for a better Evaluation of Earthquakes Attenuation Laws. In: *Book of short papers - SIS 2020* - ISBN:9788891910776.
3. **D'Angelo, N.**, Abbruzzo, A. and Adelfio, G. (2020) Spatial seismic point pattern analysis with Integrated Nested Laplace Approximation. In: Itziar Irigoien et al. (Editors), *Proceedings of the 35th International Workshop on Statistical Modelling.*
4. **D'Angelo, N.**, Adelfio, G. and Abbruzzo, A. (2021) Spatio-temporal analysis of the Covid-19 spread in Italy by Bayesian hierarchical models. In: *Book of short papers - SIS 2021.* ISBN 9788891927361.
5. **D'Angelo, N.**, Adelfio, G., Abbruzzo, A. and Ferrante, M. (2021) Identification and modelling of stop activities at the destination from GPS tracking data. In: *Book of short papers- SIS 2021.* ISBN 9788891927361.
6. **D'Angelo, N.**, D'Alessandro, A., Adelfio, G. and Chiodi, M. (2021) Evaluating the performance of a new picking algorithm based on the variance piecewise constant models. In: *Book of short papers - SIS 2021.* ISBN 9788891927361.
7. Chiodi, M., Nicolis, O., Adelfio, G., **D'Angelo, N.** and González, A. (2021) ETAS Space-time modelling of Chile induced seismicity using covariates. In: *EGU21, 19–30, April 2021* EGU21-3523.
8. **D'Angelo, N.**, Adelfio, G. and Mateu, J. (2021) Some properties and applications of local second-order characteristics for spatio-temporal point processes on networks. In: *GRASPA 2021 Conference.* ISBN:979-12-200-8496-3.
9. Priulla, A., **D'Angelo, N.** and Attanasio, M. (2021) Gender Differences In Stem Courses: Analysis Of Italian Students' Performance. In: *Book of Abstracts of the International Conference of the journal Scuola Democratica. Reinventing Education, Rome, Associazione "Per Scuola Democratica".* ISBN 978-88-944888-4-5

Book chapters.....

1. **D'Angelo, N.**, Adelfio G., D'Alessandro A., and Chiodi M. (2020) A Fast and Efficient Picking Algorithm for Earthquake Early Warning Application Based on the Variance Piecewise Constant Models. In: Gervasi O. et al. (eds) Computational Science and Its Applications – ICCSA 2020. Lecture Notes in Computer Science, vol 12255. Springer, Cham.
2. **D'Angelo, N.**, Ferrante, M., Abbruzzo, A. and Adelfio, G. (2021) Determinants of spatial intensity of stop locations on cruise passengers tracking data. In: Conference on Statistics and Information Systems for Policy Evaluation - ASA 2021. 10.36253/978-88-5518-304-8.31

Working papers.....

1. **D'Angelo, N.** and Priulla, A. (2020) Estimating the number of changepoints in segmented regression models: comparative study and application." In: dSEAS Working Papers. ISSN 2611-0172, volume IV, 2020
2. **D'Angelo, N.** and Muggeo V.M.R. (2021) Power analysis in segmented regression <https://www.researchgate.net/publication/355885747>.

Presentations.....

1. **D'Angelo, N.**, A. Abbruzzo, and G. Adelfio. (2020) Covid-19 disease mapping with INLA. In: 6th Webinar COVID-19 Forecast and Prediction.
2. **D'Angelo, N.**, G. Adelfio, and J. Mateu. (2021) Local indicators of spatio-temporal association on linear networks. In: The Spatial and Temporal Statistics Symposium (STSS)
3. **D'Angelo, N.**, G. Adelfio, A. Abbruzzo, J. Mateu, and M. Ferrante. (2021) Spatio-Temporal Linear Network Point Processes for GPS Data Analysis. In: New data for the new challenges of population and society 22-24 September 2021

Ongoing research

Submitted papers.....

1. **D'Angelo, N.**, Adelfio, G., Chiodi, M. and D'Alessandro, A. (2022) Statistical picking of multi-dimensional waveforms.
2. **D'Angelo, N.**, Abbruzzo, A., Adelfio, G. and Ferrante, M. (2022) Spatial analysis of GPS visitors' data on a road network.
3. **D'Angelo, N.**, Adelfio, G. and Mateu, J. (2022) Local inhomogeneous second-order characteristics for spatio-temporal point processes on linear networks.
4. **D'Angelo, N.**, Adelfio, G. and Mateu, J. (2022) Locally weighted minimum contrast estimation for spatio-temporal log-Gaussian Cox processes.

Work in progress papers.....

1. Díaz-Sepúlveda, J. F., **D'Angelo, N.**, Adelfio, G., González, J. and Rodríguez-Cortéz, F. (2022) Nearest-Neighbor Clutter Removal for Estimating Features in Linear Point Processes.
2. **D'Angelo, N.**, Muggeo, V. M. R. (2022) Testing for a general changepoint in psychometric studies: changes detection and sample size planning.
3. **D'Angelo, N.**, Adelfio, G., Mateu, J., and Cronie, O. (2022) Local characteristics of functional marked point processes for seismic data.

Submitted short papers.....

1. **D'Angelo, N.**, Adelfio, G., Mateu, J. (2022). Locally weighted spatio-temporal minimum contrast for Log-Gaussian Cox Processes. METMA-X
2. **D'Angelo, N.**, Adelfio, G., Mateu, J. (2022). Local Spatio-Temporal Log-Gaussian Cox Processes

for seismic data analysis. SIS2022

3. **D'Angelo, N.**, Adelfio, G., Mateu, J. (2022). Comparing local structures of spatio-temporal point processes on linear networks. SIS2022
4. Policastro, V., **D'Angelo, N.**, and Adelfio, A. (2022) Community detection of seismic point processes. SIS2022
5. **D'Angelo, N.**, Payares, D., Adelfio, G. and Mateu, J. (2022). Hawkes processes on networks for crime data. IWSM2022
6. Simonetti, A., **D'Angelo, N.**, and Adelfio, G. (2022) Marked Hawkes processes for Twitter data. JADT'2022: 16th International Conference on Statistical Analysis of Textual Data

Conferences

Invited.....

- 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2022) - King's College London

Contributed.....

- The 20th International Conference on Computational Science and Its Applications
- Spatial and Temporal Statistics Symposium (STSS), 17 - 19 February 2021
- Conference on Statistics and Information Systems for Policy Evaluation (ASA21)
- Ties-GRASPA, 7 - 9 June 2021
- 50th Scientific Meeting of the Italian Statistical Society (SIS21), 21 - 25 June
- 35th International Workshop on Statistical Modelling (IWSM2021), 19 - 23 July
- New data for the new challenges of population and society, 22 - 24 Sept. 2021

Attended.....

- Workshop PRIN Project 2015 "Complex space-time modeling and functional analysis for probabilistic forecast of seismic events", PI Giada Adelfio, Caserta, 7 february 2020
- European R users meeting (e-Rum 2020) satellite event - Webinar on `sfnetworks` R package
- Session chair at the 5th GeoPython Conference, Online, 21-22 september 2020
- The International Environmetrics Society (TIES) 2020 Virtual Conference

Software

- LISTAnet. <https://github.com/nicolettadangelo/LISTAnet>; R package version 0.1.0.
- Shiny app for power computation in segmented regression models https://uy1z3u-nicoletta0d0angelo.shinyapps.io/power_seg/
- The `pwr_seg()` function is currently available on ResearchGate at <https://www.researchgate.net/publication/355875052>

Scientific societies

- Italian Statistical Society (SIS)
- Statistical Modelling Society

Review for international journals

- Spatial and Spatio-temporal Epidemiology
- Environmetrics