

Nina DELIU

Tenure-Track Assistant Professor (RTT) @ MEMOTEF, Sapienza Università di Roma
Visiting Research Fellow @ MRC-BSU, University of Cambridge

PART I – GENERAL INFORMATION

Full Name	Nina Deliu
Personal e-mail	deliunina@gmail.com
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Webpage	https://nina-dl.github.io/

PART II – EDUCATION

UNIVERSITY DEGREES

- 2021 **PhD in Methodological Statistics** (33 cycle) - Sapienza Università di Roma
Reinforcement Learning in Modern Biostatistics: Benefits, Challenges and New Proposals
Supervisors: PIERPAOLO BRUTTI, BIBHAS CHAKRABORTY
- 2017 **MSc in Statistics and Decisions** - Sapienza Università di Roma
Deep Learning to the Test: an Application to Traffic Data Streams
Supervisor: PIERPAOLO BRUTTI. Grade: 110 *cum laude*
- 2016 **MSc in Mathématiques, Informatique, Décision, Organisation**
Double degree programme - Université Paris-Dauphine (France)
Evidence Estimation of State Space Models: Sequential Monte Carlo² and Chib's Method
Supervisor: CHRISTIAN P. ROBERT
- 2014 **BSc in Statistics, Economics and Society** - Sapienza Università di Roma
Income distribution analysis in post-communist economies
Supervisor: ALESSANDRO RONCAGLIA. Grade: 110 *cum laude*

PART III – APPOINTMENTS

IIIA – ACADEMIC APPOINTMENTS

04/2025 – current	Sapienza Università di Roma – Tenure-Track Assistant Professor (RTT)
02/2022 – current	University of Cambridge – Long-term Visiting Research Fellow
12/2021 – 12/2024	Sapienza Università di Roma – Assistant Professor (RTDA)
05/2021 – 12/2021	University of Cambridge – Postdoctoral Research Associate
11/2020 – 04/2021	University of Cambridge – Research Assistant
01/2020 – 03/2020	University of Toronto – Visiting Scholar
03/2019 – 06/2019	Duke - National University of Singapore (NUS) – Visiting Scholar

IIIB – OTHER APPOINTMENTS

12/2024 – 03/2025	Google – Visiting Faculty Researcher
08/2024 – 10/2024	FAO (Statistics Division) – Statistical Consultant
01/2022 – 06/2023	Fondazione Giacomo Brodolini – Statistical Consultant
06/2016 – 06/2018	Fondazione GIMEMA, Franco Mandelli ONLUS – Biostatistician

PART IV – TEACHING AND SUPERVISION

LECTURING

- AY 2024/2025 *Data Analysis for Business* (BSc Course 64h; ENG)
Bachelor's Degree in *Management and Computer Science*, **LUISS Guido Carli**
- AY 2024/2025 *Time Series and Financial Time Series* (MSc Course 72h; ENG)
Master's Degree in *Finance and Insurance*, MEMOTEF, **Sapienza Università di Roma**
- AY 2023/2024 *Time Series and Financial Time Series* (MSc Course 72h; ENG)
Master's Degree in *Finance and Insurance*, MEMOTEF, **Sapienza Università di Roma**
- AY 2023/2024 *Multivariate Statistics with R* (PhD Course 12h; ENG)
PhD in *Modelli per l'Economia e la Finanza*, MEMOTEF, **Sapienza Università di Roma**
- AY 2022/2023 *Analisi delle Serie Storiche* (MSc Course 48h; IT)
Master's Degree in *Finanza e Assicurazioni*, MEMOTEF, **Sapienza Università di Roma**
- AY 2022/2023 *Multivariate Statistics with R* (PhD Course 16h; ENG)
PhD in *Modelli per l'Economia e la Finanza*, MEMOTEF, **Sapienza Università di Roma**
- AY 2022/2023 *Multivariate Statistics with R* (PhD Course 6h; ENG)
PhD in *Management, Banking and Commodity Sciences*, Management, **Sapienza Uni**
- AY 2021/2022 *Multivariate Statistics with R* (PhD Course 16h; ENG)
PhD in *Modelli per l'Economia e la Finanza*, MEMOTEF, **Sapienza Università di Roma**
- AY 2021/2022 *Multivariate Statistics with R* (PhD Course 12h; ENG)
PhD in *Management, Banking and Commodity Sciences*, Management, **Sapienza Uni**
- AY 2020/2021 *Laboratorio di Metodi per la Ricerca Sociale* (MSc Course 20h; IT)
Pontificia Facoltà di Scienze dell'Educazione Auxilium
- AY 2020/2021 *Coaching formativo per competenze all'uso di \LaTeX e Beamer* (BSc Course 10h; IT)
Department of Statistical Sciences (DSS), **Sapienza Università di Roma**
- AY 2019/2020 *Coaching formativo per competenze all'uso di \LaTeX e Beamer* (BSc Course 10h; IT)
Department of Statistical Sciences (DSS), **Sapienza Università di Roma**

TEACHING ASSISTANCE

- AY 2020/2021 *Statistics for Health Data Science* (MPhil Course ENG; Prof. S Seaman)
MPhil course in *Population Health Sciences*, **University of Cambridge**
- AY 2019/2020 *Statistical Methods In Data Science And Laboratory* (MSc Course ENG; Prof. P Brutti)
Master's Degree in *Data Science*, DIAG, **Sapienza Università di Roma**
- AY 2018/2019 *Statistical Methods In Data Science And Laboratory* (MSc Course ENG; Prof. P Brutti)
Master's Degree in *Data Science*, DIAG, **Sapienza Università di Roma**
- AY 2017/2018 *Inferenza Statistica* (BSc Course IT; Prof. F De Santis)
Bachelor's Degree in *Statistics, Economics, Finance and Insurance*, DSS, **Sapienza Uni**
- AY 2017/2018 *Statistica per l'Economia* (BSc Course IT; Prof. M Barbieri)
Bachelor's Degree in *Economics*, Economics Dept, **Università Roma Tre**

TRAINING AND TUTORING

- 2022 Training seminars for the Erasmus+ Programme *ResearchCult in Higher Education in Kosovo*, **University of Pristina**, Kosovo
– *A review of the main models and techniques for data analysis* (ENG)
– *Use of \LaTeX in research* (ENG)
- 2019 *Introduction to SAS* (Master II Course 4h; IT)
Master II in *Big Data: Metodi statistici per la società della conoscenza*, DSS, **Sapienza Uni**
- 2019 *Introduction to \LaTeX and Beamer* (Master II Course 4h; IT)
Master II in *Big Data: Metodi statistici per la società della conoscenza*, DSS, **Sapienza Uni**
- 2018 *Academic Tutor* (Master II 150h; IT)
Master II in *Big Data: Metodi statistici per la società della conoscenza*, DSS, **Sapienza Uni**

SUPERVISION (As main supervisor)

- 2025 Emanuele Santaera, MSc in FINASS, **Sapienza U**
Tentative project: *Conformal inference for classification problems*
- 2025 Emanuele Masillo, MSc in FINASS, **Sapienza U**
Tentative project: *Highest-density regions in higher dimensions*
- 2025 Daniele Gidiucci, MSc in FINASS, **Sapienza U**
Tentative project: *The impact of ongoing wars on financial markets and sentiment*
- 2024 Anna Polyakova, MSc in FINASS, **Sapienza U** – graduated with 110 *cum laude*
Conformal Prediction per Dati con Dipendenza Temporale
- 2024 Davide Di Leonforte, MSc in FINASS, **Sapienza U** – graduated with 110 *cum laude*
E-values per la calibrazione sequenziale di previsioni probabilistiche in finanza
- 2024 Filippo M Novellino, MSc in FINASS, **Sapienza U** – graduated with 105
Algoritmi multi-armed bandits per problemi di selezione dinamica del modello
- 2024 Cristofaro Indorato, MSc in FINASS, **Sapienza U** – graduated with 110 *cum laude*
Scenari Futuri nel Metaverso: Predizione e sentiment analysis tramite RNN
- 2023 Emilio Tarducci, MSc in FINASS, **Sapienza U** – graduated with 110 *cum laude*
Thompson Sampling per decisioni ottime in finanza: scelta del modello e di portafogli
- 2022 Thomas Slater, Summer Intern at MRC – BSU, **University of Cambridge**
Impact of High-Dimensional Data on Adaptive Allocation Scheme Performance

SUPERVISION (As co-supervisor / mentor)

- 2024 – current Amy Armento, PhD Student in Biostatistics, **Cambridge U** (Co-supervisor)
Main supervisor: Sofia S Villar
- 2022 – current Rajenki Das, PostDoc, **Cambridge U** (Co-supervisor)
Manager: Sofia S Villar
- 2021 – exp 2025 Xinru Wang, PhD Candidate in Health Data Science, **Duke-NUS** (Mentor)
Main supervisor: Bibhas Chakraborty
- 2021 – exp 2025 Xueqing Liu, PhD Candidate in Health Data Science, **Duke-NUS** (Mentor)
Main supervisor: Bibhas Chakraborty, **Duke-NUS**
- 2023 Sagnik Biswas, Intern at **Duke-NUS** (Co-supervisor)
Modeling non-stationarities in multi-armed bandit problems
Joint supervisor with Bibhas Chakraborty

PART V – AWARDS AND HONORS

- 12/2024 ICSDS2024 Conference – *IMS Travel Award* (\$800)
Talk: *Finite-sample and Asymptotic Error Control of a Novel Test for Adaptive Designs*
- 12/2023 ICSDS2023 Conference – *IMS Travel Award* (\$1200)
Talk: *Modeling considerations when optimizing experiments with reinforcement learning*
- 05/2023 The Institute of Education Sciences (IES) – *\$1M XPRIZE Digital Learning Challenge* (\$500K)
Project: [Adaptive Experimentation Accelerator: The MOOClet Framework](#)
(Partnership with Toronto Uni, Carnegie Mellon Uni & North Carolina State Uni)
- 06/2018 SIS Annual Meeting – *Best Poster Prize 2018* (€250 + Tstat Course)
Poster: *Deep Learning to the Test: an Application to Traffic Data Streams*
- 10/2017 International Society for Quality of Life (ISOQOL) – *New Investigator Award* (\$1500)
Talk: *Modelling Strategies to Improve Estimates of Prognostic Factors Analyses with PROs*
- 07/2014 DiSCo Lazio – *Graduation Prize* (€500)

PART VI – FUNDING: SCHOLARSHIPS, GRANTS (PI / Co-PI)

- 2025 (€3K) **Sapienza Università di Roma** – Academic Research Grant (PI)

2024 (\$50K)	<i>Methods for Adaptive Experiments to Enhance Digital Education in Statistical Courses</i> World Anti-Doping Agency – WADA Research Grant (Co-PI; PI: B Liseo) <i>Enhancing the methodological framework for doping detection: from univariate to multivariate testing analysis on Athlete Biological Passport profiles</i>
2022 (€3K)	Sapienza Università di Roma – Academic Research Grant (PI) <i>Development of a Methodological Framework for Enhancing the Fight Against</i>
2019 (€1K)	Sapienza Università di Roma – Academic Starting Research Grant (PI) Title: <i>Contextual Bandits for Developing Personalized Mobile Health Interventions</i>
2019 (\$1750)	CIFAR & AMII – Travel Scholarship for attending the <i>Deep Learning and Reinforcement Learning Summer School</i> , University of Alberta, Canada
2018 (€1K)	Sapienza Università di Roma – Academic Starting Research Grant (PI) Title: <i>Self-reported health outcomes in cancer risk prediction using the UK Biobank</i>
2015	EU Commission – Erasmus+ Scholarship (Université Paris-Dauphine, France)

PART VII – CURRENT RESEARCH ACTIVITIES AND COLLABORATIONS

Keywords	Short description
<ul style="list-style-type: none"> Reinforcement learning (RL) Multi-armed bandits (MABs) 	<p>Study and development of statistically-considerate RL and MAB algorithms for sequential decision-making problems <i>Motivating applications:</i> Adaptive interventions, Dynamic treatment regimes, JITAs in mobile health, Adaptive experiments <i>Collab:</i> NUS, Cambridge University, Google</p>
<ul style="list-style-type: none"> Design of experiments Inference in adaptive designs 	<p>Developing Bayesian experimental designs with improved participant and statistical outcomes Developing valid inference methods for adaptively-collected data <i>Motivating applications:</i> Adaptive and personalised designs for clinical trials, Adaptive experiments in higher education <i>Collab:</i> Cambridge University (MRC-Biostats Unit, Department of Medicine), University of Toronto, Royal Papworth Hospital</p>
<ul style="list-style-type: none"> Uncertainty quantification Statistical intervals Conformal inference 	<p>Conformal inference methods for uncertainty quantification Estimation of highest-density regions, Accuracy estimation <i>Motivating applications:</i> Multisource registers in official statistics, Inference in sample survey designs, Doping detection, Estimation of disaster-induced production loss in agriculture <i>Collab:</i> ISTAT, NADO Italia, FAO</p>
<ul style="list-style-type: none"> Bayesian copula modeling 	<p>Development of a multivariate copula-based Bayesian framework for enhanced testing analysis <i>Motivating application:</i> Doping detection in longitudinal athlete biological passport profile data <i>Collab:</i> NADO Italia, World Anti-Doping Agency</p>

PART VIII: SELECTED RESEARCH ARTICLES

PEER-REVIEWED JOURNAL ARTICLES

- [1] N. Deliu and S. S. Villar. “Finite-sample and asymptotic validity of a novel design-based test statistic for response-adaptive randomisation”. In: *Biometrics* (2025). DOI: [10.1093/biomtc/ujaf069](https://doi.org/10.1093/biomtc/ujaf069). Accepted.
- [2] X. Liu, N. Deliu, T. Chakraborty, L. Bell, and B. Chakraborty. “Thompson sampling for zero-inflated count outcomes with an application to the Drink Less mobile health study”. In: *The Annals of Applied Statistics* (2025). Accepted.
- [3] N. Deliu and B. Liseo. “A Copula-based Bayesian Framework for Doping Detection”. In: *Computational Statistics* (2024). DOI: [10.1007/s00180-024-01579-x](https://doi.org/10.1007/s00180-024-01579-x).

- [4] N. Deliu and B. Liseo. "Alternative Approaches for Estimating Highest-Density Regions". In: *International Statistical Review* (2024). DOI: [10.1111/insr.12592](https://doi.org/10.1111/insr.12592).
- [5] X. Wang, N. Deliu, Y. Narita, and B. Chakraborty. "Incorporating participants' welfare into sequential multiple assignment randomized trials". In: *Biometrics* 80.1 (2024). DOI: [10.1093/biometc/ujad004](https://doi.org/10.1093/biometc/ujad004).
- [6] N. Deliu, J. J. Williams, and B. Chakraborty. "Reinforcement Learning in Modern Biostatistics: Constructing Optimal Adaptive Interventions". In: *International Statistical Review* (2024). DOI: [10.1111/insr.12583](https://doi.org/10.1111/insr.12583).
- [7] N. Deliu. "Multinomial Thompson sampling for rating scales and prior considerations for calibrating uncertainty". In: *Statistical Methods & Applications* 33.2 (2024), pp. 439–469. DOI: [10.1007/s10260-023-00732-y](https://doi.org/10.1007/s10260-023-00732-y).
- [8] N. Deliu, R. Das, A. May, J. Newman, J. Steele, M. Duckworth, R. J. Jones, M. R. Wilkins, M. Toshner, and S. S. Villar. "StratosPHere 2: study protocol for a response-adaptive randomised placebo-controlled phase II trial to evaluate hydroxychloroquine and phenylbutyrate in pulmonary arterial hypertension caused by mutations in BMPR2". In: *Trials* 25.680 (2024). DOI: [10.1186/s13063-024-08485-z](https://doi.org/10.1186/s13063-024-08485-z).
- [9] N. Deliu. "Reinforcement learning for sequential decision making in population research". In: *Quality & Quantity* (2023). DOI: [10.1007/s11135-023-01755-z](https://doi.org/10.1007/s11135-023-01755-z).
- [10] X. Liu, N. Deliu, and B. Chakraborty. "Microrandomized Trials: Developing Just-in-Time Adaptive Interventions for Better Public Health". In: *American Journal of Public Health* 113.1 (2023), pp. 60–69. DOI: [10.2105/AJPH.2022.307150](https://doi.org/10.2105/AJPH.2022.307150). (Paper with discussion, paper featured on the Jan 2023 issue cover. Outreach activity: *AJPH Podcast – SMART and MRT, emerging methods in public health*).
- [11] C. A. Figueroa, N. Deliu, B. Chakraborty, A. Modiri, J. Xu, J. Aggarwal, J. Jay Williams, C. Lyles, and A. Aguilera. "Daily Motivational Text Messages to Promote Physical Activity in University Students: Results From a Microrandomized Trial". In: *Annals of Behavioral Medicine* 56.2 (2022), pp. 212–218. DOI: [10.1093/abm/kaab028](https://doi.org/10.1093/abm/kaab028).
- [12] C. A. Figueroa, A. Aguilera, B. Chakraborty, A. Modiri, J. Aggarwal, N. Deliu, U. Sarkar, J. Jay Williams, and C. R. Lyles. "Adaptive learning algorithms to optimize mobile applications for behavioral health: guidelines for design decisions". In: *Journal of the American Medical Informatics Association* 28.6 (2021), pp. 1225–1234. DOI: [10.1093/jamia/ocab001](https://doi.org/10.1093/jamia/ocab001).
- [13] F. Cottone, N. Deliu, G. S. Collins, A. Aota, F. Bonnetain, K. Van Steen, D. Cella, and F. Efficace. "Modeling strategies to improve parameter estimates in prognostic factors analyses with patient-reported outcomes in oncology". In: *Quality of Life Research* 28.5 (2019), pp. 1315–1325. DOI: [10.1007/s11136-018-02097-2](https://doi.org/10.1007/s11136-018-02097-2).
- [14] F. Sparano, N. K. Aaronson, F. Cottone, A. Piciocchi, E. La Sala, A. Aota, N. Deliu, J. M. Kieffer, and F. Efficace. "Clinician-reported symptomatic adverse events in cancer trials: are they concordant with patient-reported outcomes?" In: *Journal of Comparative Effectiveness Research* 8.5 (2019), pp. 279–288. DOI: [10.2217/cer-2018-0092](https://doi.org/10.2217/cer-2018-0092).
- [15] N. Deliu, F. Cottone, G. S. Collins, A. Aota, and F. Efficace. "Evaluating methodological quality of Prognostic models Including Patient-reported HeAlth outcomes iN oncology (EPIPHANY): a systematic review protocol". In: *BMJ Open* 8.10 (2018), e025054. DOI: [10.1136/bmjopen-2018-025054](https://doi.org/10.1136/bmjopen-2018-025054).
- [16] A. Ousmen, C. Touraine, N. Deliu, F. Cottone, F. Bonnetain, F. Efficace, A. Brédart, C. Mollevi, and A. Aota. "Distribution- and anchor-based methods to determine the minimally important difference on patient-reported outcome questionnaires in oncology: a structured review". In: *Health and Quality of Life Outcomes* 16.1. Article number: 228 (2018). DOI: [10.1186/s12955-018-1055-z](https://doi.org/10.1186/s12955-018-1055-z).

PEER-REVIEWED CONFERENCE PROCEEDINGS

- [17] I. Musabirov, M. Reza, H. Song, S. Moore, P. Chen, H. Kumar, T. Li, J. Stamper, N. Bier, A. Rafferty, T. Price, N. Deliu, A. Durand, M. Liut, and J. J. Williams. "Platform-based Adaptive Experimental Research in Education: Lessons Learned from Winning a Digital Learning Challenge". In: *The Fifteenth International Conference on Learning Analytics & Knowledge (LAK25): Learning Analytics in the Age of Artificial Intelligence*. Dublin, Ireland: ACM, 2025, pp. 13–23. DOI: [10.1145/3706468.3706471](https://doi.org/10.1145/3706468.3706471). (Full-length paper in AI-ML Conference).

- [18] N. Deliu and B. Liseo. “Conformal methods in official statistics: perspectives and challenges”. In: *The Third Workshop on Methodologies for Official Statistics*. Rome, Italy: ISTAT, 2025. In Press.
- [19] N. Deliu, J. J. Williams, and S. S. Villar. “Finite-sample inference in response-adaptive designs: an application to Thompson sampling”. In: *Methodological and Applied Statistics and Demography II SIS 2024, Short Papers, Solicited Sessions*. Ed. by A. Pollice and P. Mariani. Italian Statistical Society Series on Advances in Statistics. Bari, Italy: Springer, 2025, pp. 393–398. ISBN: 978-3-031-64349-1. DOI: [10.1007/978-3-031-64350-7_66](https://doi.org/10.1007/978-3-031-64350-7_66).
- [20] H. Kumar, T. Li, J. Shi, I. Musabirov, R. Kornfield, J. Meyerhoff, A. Bhattacharjee, C. Karr, T. Nguyen, D. Mohr, A. Rafferty, S. Villar, N. Deliu, and J. J. Williams. “Using Adaptive Bandit Experiments to Increase and Investigate Engagement in Mental Health”. In: *Proceedings of The AAAI Conference on Artificial Intelligence*. Vol. 38. 2024, pp. 22906–22912. DOI: [10.1609/aaai.v38i21.30328](https://doi.org/10.1609/aaai.v38i21.30328). (Full-length paper in Top-tier AI-ML conference; 2024 acceptance rate = 23.7%).
- [21] I. Musabirov, M. Reza, S. Moore, P. Chen, H. Kumar, T. Li, H. Song, J. Shi, K. Choy, T. Price, J. Stamper, N. Bier, N. Deliu, S. S. Villar, A. Rafferty, A. Durand, and J. J. Williams. “Platform-based Adaptive Experimental Research in Education: Lessons Learned from Digital Learning Challenge”. In: *The Fourteenth International Conference on Learning Analytics & Knowledge (LAK24): Learning Analytics in the Age of Artificial Intelligence*. Kyoto, Japan: ACM, 2024. ISBN: 9798400716188. (Full-length paper in AI-ML Conference; 2024 acceptance rate = 26.1%).
- [22] A. Bhattacharjee, H. Song, X. Wu, J. Tomlinson, M. Reza, A. E. Chowdhury, N. Deliu, T. W. Price, and J. J. Williams. “Informing Users about Data Imputation: Exploring the Design Space for Dealing With Non-Responses”. In: *The eleventh AAAI Conference on Human Computation and Crowdsourcing (HCOMP2023)*. Vol. 11. Delft, The Netherlands, 2023, pp. 14–26. DOI: [10.1609/hcomp.v11i1.27544](https://doi.org/10.1609/hcomp.v11i1.27544). (Full-length paper in Top-tier AI-ML conference; 2023 acceptance rate \approx 25%).
- [23] N. Deliu and B. Liseo. “Computing Highest Density Regions with Copulae”. In: *SEAS IN. Statistical Learning, Sustainability and Impact Evaluation, Book of Short Papers SIS 2023*. Ed. by F. M. Chelli, M. Ciommi, S. Ingrassia, F. Mariani, and M. C. Recchioni. Ancona, Italy: Pearson, 2023, pp. 1235–1240. ISBN: 9788891935618. (Short paper extended to journal article [4]).
- [24] I. Chien, N. Deliu, R. Turner, A. Weller, S. Villar, and N. Kilbertus. “Multi-disciplinary fairness considerations in machine learning for clinical trials”. In: *ACM FAccT ’22: Proceedings of the 2022 ACM Conference on Fairness, Accountability, and Transparency*. Seoul, Republic of Korea: ACM, 2022, pp. 906–924. ISBN: 9781450393522. DOI: [10.1145/3531146.3533154](https://doi.org/10.1145/3531146.3533154). (Full-length paper in Top-tier AI-ML conference; 2022 acceptance rate \approx 24%).
- [25] N. Deliu. “Multinomial Thompson Sampling for adaptive experiments with rating scales”. In: *Book of Short Papers SIS 2022*. Ed. by A. Balzanella, M. Bini, C. Cavicchia, and R. Verde. Caserta, Italy: Pearson, 2022, pp. 1065–1070. ISBN: 9788891932310. (Short paper extended to journal article [7]).
- [26] N. Deliu and P. Brutti. “Deep Learning to the Test: an Application to Traffic Data Streams”. In: *Book of Short Papers SIS 2018*. Ed. by A. Abbruzzo, E. Brentari, M. Chiodi, and D. Piacentino. Palermo, Italy: Pearson, 2018, pp. 1597–1602. ISBN: 9788891910233. (Best poster award).

BOOK CHAPTERS

- [27] N. Deliu and B. Chakraborty. “Artificial Intelligence-based Decision Support Systems for Precision and Digital Health”. In: *Frontiers of Statistics and Data Science*. Ed. by S. Ghoshal and A. Roy. International Indian Statistical Association Series on Statistics and Data Science. Springer, 2025 (In Press). (With anonymous peer review).
- [28] N. Deliu. “Multiculturalism and Interculturalism: A Qualitative Analysis of the Perspective of Focus Group Participants”. In: *Education in Multiculturalism, Education to Interculturalism. In Ecclesiastical Institutions of Higher Education and in Formation Communities for Catholic Consecrated Life in Italy*. Ed. by E. Ottone and L. Pandolfi. Urbaniana University Press, Città del Vaticano, 2023, pp. 113–158. ISBN: 978-88-401-9061-7.
- [29] N. Deliu and B. Chakraborty. “Dynamic Treatment Regimes for Optimizing Healthcare”. In: *The Elements of Joint Learning and Optimization in Operations Management*. Ed. by X. Chen, S. Jasin, and C. Shi. Springer Series in Supply Chain Management. Cham: Springer International Publishing, 2022, pp. 391–444. ISBN: 9783031019265. DOI: [10.1007/978-3-031-01926-5_15](https://doi.org/10.1007/978-3-031-01926-5_15).

PHD THESIS

- [30] N. Deliu. “Reinforcement Learning in Modern Biostatistics: Benefits, Challenges and New Proposals”. PhD Thesis. Rome: University of Rome La Sapienza, 2021.

UNDER REVIEW, PREPRINTS, IN PREPARATION

- Deliu, N. and Liseo, B. *The Interplay between Bayesian Inference and Conformal Prediction: Towards a Bayesian Conformal Inference Framework*.
- Deliu, N., Falorsi, P.D., Falorsi, S., Chianella, D., and Alleva, G. *Assessing the Accuracy of Multisource Register-based Official Statistics for Multinomial Outcomes* Arxiv Preprint: <https://arxiv.org/abs/2502.10182>
- Das, R., Deliu, N., Toshner, M., and Villar S.S. *Implementing Response-Adaptive Randomisation in Stratified Rare-disease Trials: Design Challenges and Practical Solutions*. Arxiv Preprint: <https://arxiv.org/abs/2410.03346>
- Di Leonforte, D.C. and Deliu, N. *Dynamic Testing of Volatility Models’ Calibration with E-Values*. Available at SSRN: <http://dx.doi.org/10.2139/ssrn.5139383>
- Das, R., Deliu, N., Toshner, M., and Villar S.S. *StratosPHere 2: statistical analysis plan for a response-adaptive randomised placebo-controlled phase II trial to evaluate hydroxychloroquine and phenylbutyrate in pulmonary arterial hypertension caused by mutations in BMPR2*.
- Jones, R.J., De Bie, E.M.D.D., Ng, A.Y.K., Dunmore, B.J., Deliu, N., Graf, S., Lawrie, A., Newman, J., Polwarth, G., Rhodes, C., Hemnes, A., West, J., Villar, S., Upton, P.D., UK National Cohort Study of Idiopathic and Heritable PAH Consortium, the Uniphy Clinical Trials Network, and Toshner, M.R. *BMPR-II Biomarkers for testing therapeutic efficacy in pulmonary arterial hypertension – novel findings from the StratosPHere 1 study*
- Li, T., Nogas, J., Song, H., Kumar, H., Durand, A., Rafferty, A., Deliu, N., Villar, S.S., Williams, J.J. *Algorithms for Adaptive Experiments that Trade-off Statistical Analysis with Reward: Adaptively Combining Uniform Random Assignment and Thompson Sampling*. Presented at the Workshop on Causal Inference Challenges in Sequential Decision Making: Bridging Theory and Practice, NeurIPS 2021. Arxiv Preprint: <https://arxiv.org/abs/2112.08507>
- Williams, J. J., Nogas, J., Deliu, N. et al., *Challenges in Statistical Analysis of Data Collected by a Bandit Algorithm: An Empirical Exploration in Applications to Adaptively Randomized Experiments*. Arxiv Preprint: <https://arxiv.org/abs/2103.12198>

PRESENTATIONS

- 2025
05/2025 **Invited Talk @ Diabetes StatClin Meeting (DISC)**, Santiago de Compostela (ESP)
Reinforcement Learning in the Era of Personalized and Digital Health
- 2024
12/2024 **Invited Talk @ ICSDS2024**, Nice (FR)
Finite-sample and Asymptotic Error Control of a Novel Test for Response-adaptive Designs
10/2024 **Invited Talk @ International Day of Women in Statistics and Data Science**, online
Finite-sample and Asymptotic Error Control of a Novel Test for Response-adaptive Designs
09/2024 **Contributed Poster @ COPA2024**, Politecnico di Milano (IT)
Anomaly Detection in Multivariate Profiles with Conformal Bayesian Inference
06/2024 **Invited Talk @ SIS2024**, Università degli Studi di Bari (IT)
Finite-sample inference in response-adaptive designs: an application to Thompson sampling
03/2024 **Chair & Discussant @ SIS2024**, Università degli Studi di Bari (IT)
Session: Health Statistics & Bayesian methods
06/2024 **Invited Talk @ BMS-ANed Meeting (Dutch Section of IBS)**, Erasmus University MC (NH)
Online sequential-decision making via bandits: modeling considerations for better decisions
05/2024 **Contributed Talk @ AUEB Sports Analytics Workshop 2024**, AUEB Athens (GR)

- A Multivariate Copula-based Conformal Bayesian Framework for Doping Detection*
- 05/2024 **Invited Seminar** @ **Department of Statistical Sciences, Università di Padova (IT)**
Designing experiments via bandit algorithms: modeling considerations for better outcomes
- 04/2024 **Keynote Talk** @ **ALBECS2024: Algorithmic Behavior Change Support** (19th International Conference on Persuasive Technology 2024), University of Wollongong (AU; online)
Designing adaptive experiments via bandits: modeling considerations for better outcomes
- 05/2024 **Invited Seminar** @ **Department of Statistical Sciences, University College of London (UK)**
A Multivariate Copula-based Conformal Bayesian Framework for Doping Detection
- 03/2024 **Contributed Talk** @ **MEMOTEF Research Days 2024**, Sapienza Università di Roma (IT)
Reinforcement learning for sequential decision-making: from healthcare to finance
- 03/2024 **Chair & Discussant** @ **MEMOTEF Research Days 2024**, Sapienza Università di Roma (IT)
Discussion Session: Food for Thought. Insights on the Research Carried out by the Department.
- 02/2024 **Invited Talk** @ **Response-Adaptive Randomisation Workshop**, Cambridge University (UK)
Thompson sampling for zero-inflated count data in mobile health trials
- 2023
- 12/2023 **Invited Talk** @ **ICSIDS2023**, Lisbon (PR)
Modeling considerations when optimizing adaptive experiments with reinforcement learning
- 09/2023 **Invited Talk** @ **StaTalk 2023**, DSS, Sapienza Università di Roma (IT)
On the finite-sample and asymptotic validity of an allocation-probability test for adaptively-collected data
- 09/2023 **Invited Talk** @ **Bayesian Day 2023**, DSS, Sapienza Università di Roma (IT)
Enhancing Patient Outcomes and Statistical Efficiency in Rare Disease Phase-II Trials
- 08/2023 **Invited Talk** @ **JSM2023**, Toronto (online)
An Allocation Probability Test for Adaptive Experiments: Application to Thompson Sampling
- 08/2023 **Contributed Poster** @ **ISCB2023**, Università degli Studi di Milano Bicocca (IT)
Enhancing Patient Outcomes and Statistical Efficiency in Rare Disease Phase-II Trials
- 08/2023 **Contributed Talk** @ **EcoSta2023**, Waseda University, Tokyo (JP)
Probabilistic and Distance-based Approaches for Computing Highest-Density Regions
- 06/2023 **Contributed Talk** @ **SIS2023**, Università Politecnica delle Marche (IT)
Computing Highest Density Regions with Copulae
- 06/2023 **Contributed Poster** @ **MEMOTEF Research Days 2023**, Sapienza Università di Roma (IT)
Computing Highest Density Regions with Copulae
- 06/2023 **Invited Talk** @ **ITACOSM2023**, Università della Calabria, Arcavacata di Rende (IT)
Assessing the predictive accuracy of official-statistics registries: the Global MSE
- 05/2023 **Invited Seminar** @ **DISP, Università degli Studi di Napoli Federico II (IT)**
Multinomial Thompson Sampling for Online Sequential Decision Making with Rating Scales
- 04/2023 **Contributed Talk** @ **ICNA-STA 2023**, University of Prishtina (Kosovo)
Adaptive Experiments for Digital Education: Benefits and Statistical Challenges
- 02/2023 **Invited Seminar** @ **BSU Together, MRC-BSU, University of Cambridge (online)**
Enhancing the fight against doping: using copulae for multivariate testing analysis
- 2022
- 06/2022 **Invited Talk** @ **IMS2022 Annual Meeting**, London School of Economics, London (UK)
Multinomial Thompson Sampling for adaptive experiments with rating scales data
- 06/2022 **Contributed Talk** @ **SIS2022 Annual Meeting**, Università Luigi Vanvitelli, Caserta (IT)
Multinomial Thompson Sampling for adaptive experiments with rating scales data
- 06/2022 **Invited Talk** @ **7th ICSPM 2022**, Academy of Economic Studies of Moldova (online)
Just-in-Time Adaptive Interventions to Guide Healthy Behavioral Changes
- 06/2022 **Contributed Talk** @ **MEMOTEF Research Days 2022**, Sapienza Università di Roma (IT)
Enhancing the fight against doping: using copulas for multivariate testing analysis
- 05/2022 **Contributed Talk** @ **AUEB Sports Analytics Workshop 2024**, AUEB Athens (GR)
Enhancing the fight against doping: using copulas for multivariate testing analysis
- 05/2022 **Invited Seminar** @ **Inserm-Singapore COLLAB: Next Generation Trials**, INSERM (online)
Design-based Inference in Response-Adaptive Randomization
- 02/2022 **Invited Seminar** @ **Università degli Studi della Tuscia (IT)**
Infortuni e morti sul lavoro pre e post-pandemia: alcuni dati statistici

2021

- 11/2021 [Invited Talk](#) @ **18th Armitage Workshop and Lecture**, University of Cambridge (UK)
Design-based Inference in Response-Adaptive Randomization
- 11/2021 [Invited Talk](#) @ **Inter. Congress on Multiculturality**, Pontificia Università Urbaniana (IT)
Multiculturality and Interculturality: a qualitative analysis on focus group interviews
- 07/2021 [Invited Talk](#) @ **Bernoulli-IMS 10th World Congress in Probability and Statistics – Young Research Meeting**, Seoul National University (online)
Using Reinforcement Learning to Design Just-in-Time Adaptive Interventions
- 03/2021 Contributed Talk @ **Stat.Edu21: New perspectives in Statistics Education** (online)
Adaptive Experiments for Digital Education: Benefits and Statistical Challenges
- 2017-20
- 12/2020 [Invited Seminar](#) @ **Camplus College**, Rome (IT)
Reading the Numbers in Medicine: the Role of Statistics in Biomedical Studies
- 07/2019 Contributed Poster @ **DLRLSS2019**, University of Alberta, Edmonton (CA)
Deep Learning to the Test: an Application to Traffic Data Streams
- 06/2018 Contributed Poster @ **SIS2018 Annual Meeting**, Università degli Studi di Palermo (IT)
Deep Learning to the Test: an Application to Traffic Data Streams
- 06/2018 Contributed Poster @ **V PhD Day of the School of Statistical Sciences**, DSS, Sapienza Università di Roma (IT)
Deep Learning to the Test: an Application to Traffic Data Streams
- 10/2017 Contributed Talk @ **ISOQOL2018**, Philadelphia (USA)
Modelling Strategies to Improve Estimates of Prognostic Factors Analyses with PROs
- '16-'18 [Invited Talk](#) @ **EORTC Annual Meetings**, Paris 2016, Manchester 2017, Bruxelles 2018 (EU)
An international field study for the reliability and validity of the EORTC-CML24

SERVICE TO PROFESSION

INSTITUTIONAL SERVICE (SAPIENZA UNIVERSITÀ DI ROMA)

- 2023–current Scientific and Organizing *Coordinator* of the XIV MEMOTEF Research Days 2024
26-27 March 2024, National Institute of Roman Studies, Rome
- 2023–current *Committee Member* of TLC-S: Centro Interdipartimentale di Ricerca e Servizi Teaching and Learning Center Sapienza
- 2023 Scientific and Organizing *Committee Member* of the XIII MEMOTEF Research Days 2023
27-28 June 2023, Italian Geographic Society, Rome

INSTITUTIONAL SERVICE (UNIVERSITY OF CAMBRIDGE)

- 2023 *Search Committee Member* for a Postdoctoral Researcher (Research Associate @ MRC–BSU, University of Cambridge)
- 2022 *Selection Panel Member* for ten summer interns (Paid Summer Research Internships @ MRC–BSU, University of Cambridge)

EXTRA-INSTITUTIONAL SERVICE

- Editorial Board Member of [YoungStats](#) – The blog of Young Statisticians Europe (since 2021)
- Associate Editor for *Trials* (2024+)
- Scientific coordinator of the Cultural and Scientific Collaboration Agreement between the International Business College Mitrovica (IBC-M) & MEMOTEF, Sapienza Università di Roma
- Scientific Committee Member of ICNA-STA International Scientific Conference 2023 (4-5 May 2023, University of Prishtina, Kosova)
- Member of the following societies: *IMS, ACM, SIS, YoungSIS, ISCB, IBS Italy, SIMEF*

- Member of the following international research groups: *Intelligent Adaptive Interventions Lab* (University of Toronto), *Adaptive Design Working Group* (MRC-NIHR Trials Methodology Research Partnership), *Efficient Study design* (MRC-BSU University of Cambridge)
- Journal Reviewer: *Biometrics*, *Biometrical Journal*, *Journal of the American Statistical Association*, *Neural Computation*, *Statistical Methods in Medical Research*, *Statistical Methods and Applications*, *Statistical Papers*
- Conference Reviewer: *International Conference on Artificial Intelligence and Statistics (AISTATS)*, *American Medical Informatics Association (AMIA) Annual Symposium*, *Italian Statistical Society (SIS) Meeting*, *International Conference on New Achievements in Science, Technology and Arts (ICNA-STA)*
- Organizer & Chair in the following scientific sessions:
 - *Innovative design and analysis methods for optimizing healthcare* – **EcoSta 2023**
 - *Statistical methods for innovative experimental designs* – **IMS Annual Meeting 2022**
 - *Theory and Methods for Inference in MAB Problems* – **OneWorld YoungStatS 2022**
- Chair in the following scientific events:
 - *Session 2 – X PhD Day of the School of Statistical Sciences 2023*, DSS, Sapienza
 - *Networks and Graphs* – **MEMOTEF Research Days 2023**
 - *Education Sciences* – **ICNA-STA 2023**
 - *Social and Humanity Sciences* – **ICNA-STA 2022**

OUTREACH ACTIVITIES

- Interview invitations:
 - by Marcos Matabuena (Harvard University): *Reinforcement Learning: A Real Revolution in Digital Health or Overoptimism?*
 - by Charles J. Gomez (University of Arizona): *Structure of scientific collaboration across different fields and national borders.*
- Interviewed Susan Athey, Professor @ Stanford University, published in [IMS Bulletin](#), 53(1), 2024
- Contribution to *Sapienza Open Days* – Economics Faculty, Sapienza Università di Roma (2022-2024)
- *Welcome Day Finass 2022*: Orientation day for new students (19 October 2022)
- Contributed blogpost *A day in the life of a statistician*, MRC-Biostatistics, University of Cambridge
- Curator of X (Twitter) page @WomenInStat
- Contribution to *Sapienza Open Days* – DSS, Sapienza Università di Roma (2018-2019)
- Tutoring and teaching support for the programme [Piano Lauree Scientifiche \(PLS\)](#), DSS, Sapienza Università di Roma. Activities: tutoring, support during *Italian Statistics Olympics* organised by SIS, dissemination in high schools on: *Designing a Survey*, *Laboratory of Probability*

COMPUTER SKILLS

Operating Systems: MacOS, Windows
 Software: R, R Studio, Python, \LaTeX , Microsoft Office, SAS, WinBUGS, JAGS, Stan

DEVELOPMENT OF R PACKAGES

countts <https://cran.r-project.org/web/packages/countts/>
(Supporting R package to revised journal article in AoAS: Liu, Deliu et al. 2024+)

HDR2D <https://github.com/nina-DL/HDR2D>
(Supporting R package to journal article in ISR [4]: Deliu and Liseo, 2024)

May 2025