Nina DELIU

Visiting Research Fellow @ MRC–BSU, University of Cambridge
Visiting Faculty Researcher @ Google

PART I – GENERAL INFORMATION

Full Name   Nina Deliu

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

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 – current   **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

<u>LECTURING</u>

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 L^{A}T$_E$X 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 L^{A}T$_E$X e Beamer* (BSc Course 10h; IT)
Department of Statistical Sciences (DSS), **Sapienza Università di Roma**

<u>EXAMINER</u>

AY 2022/2023   *Time Series and Financial Time Series* (ENG)
Master's Degree in *Finance and Insurance*, MEMOTEF, **Sapienza Università di Roma**

AY 2021/2022   *Time Series and Financial Time Series* (ENG)
Master's Degree in *Finance and Insurance*, MEMOTEF, **Sapienza Università di Roma**

AY 2021/2022   *Analisi delle Serie Storiche* (IT)
Master's Degree in *Finanza e Assicurazioni*, MEMOTEF, **Sapienza Università di Roma**

<u>TEACHING ASSISTANCE</u>

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**

<u>TRAINING AND TUTORING</u>

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 L*^{A}*T*$_E$*X 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 L*^{A}*T*$_E$*X 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)

Submitted   **EU – HORIZON MSCA Doctoral Networks 2024** (Dissemination WP Leader)
                 Statistical Methodologies for Personalised Approaches to Healthcare Delivery

Submitted   **EU – HORIZON MSCA Doctoral Networks 2024** (Statistics WP Leader)
                 Research And Training in Intervention Optimisation: The RATIO network

Submitted   **Sapienza Università di Roma** – Academic Research Grant (PI; €4K)
                 Methods for Adaptive Experiments to Enhance Digital Education in Statistical Courses

2024 ($50K)   **World Anti-Doping Agency** – WADA Research Grant (Co-PI; PI: B Liseo)
                 Enhancing the methodological framework for doping detection: from
                 univariate to multivariate testing analysis on Athlete Biological Passport profiles

2022 (€3K)   **Sapienza Università di Roma** – Academic Research Grant (PI)
                 Development of a Methodological Framework for Enhancing the Fight Against

2019 (€1K)   **Sapienza Università di Roma** – Academic Starting Research Grant (PI)
                 Title: *Contextual Bandits for Developing Personalized Mobile Health Interventions*

2019 ($1750)   **CIFAR & AMII** – *Travel Scholarship* for attending the *Deep Learning and Reinforcement*
                 Learning Summer School, University of Alberta, Canada

2018 (€1K)   **Sapienza Università di Roma** – Academic Starting Research Grant (PI)
                 Title: *Self-reported health outcomes in cancer risk prediction using the UK Biobank*

2015   **EU Commission** – *Erasmus+* Scholarship (Université Paris-Dauphine, France)

PART VII – CURRENT RESEARCH ACTIVITIES AND COLLABORATIONS

Keywords	Short description
• Reinforcement learning (RL) • Multi-armed bandits (MABs)	Study and development of statistically-considerate RL and MAB algorithms for sequential decision-making problems *Motivating applications*: Adaptive interventions, Dynamic treatment regimes, JITAIs in mobile health, Adaptive experiments *Collab*: NUS, Cambridge University, Google
• Design of experiments • Inference in adaptive designs	Developing Bayesian experimental designs with improved participant and statistical outcomes Developing valid inference methods for adaptively-collected data *Motivating applications*: Adaptive and personalised designs for clinical trials, Adaptive experiments in higher education *Collab*: Cambridge University (MRC–Biostats Unit, Department of Medicine), University of Toronto, Royal Papworth Hospital
• Uncertainty quantification • Statistical intervals • Conformal inference	Conformal inference methods for uncertainty quantification Estimation of highest-density regions, Accuracy estimation *Motivating applications*: Multisource registers in official statistics, Inference in sample survey designs, Doping detection, Estimation of disaster-induced production loss in agriculture *Collab*: ISTAT, NADO Italia, FAO
• Bayesian copula modeling	Development of a multivariate copula-based Bayesian framework for enhanced testing analysis *Motivating application*: Doping detection in longitudinal athlete biological passport profile data *Collab*: NADO Italia, World Anti-Doping Agency

PART VIII: SELECTED RESEARCH ARTICLES

PEER-REVIEWED JOURNAL ARTICLES

[1] N. Deliu and B. Liseo. "A Copula-based Bayesian Framework for Doping Detection". In: *Computational Statistics* (2024). DOI: 10.1007/s00180-024-01579-x.

[2] N. Deliu and B. Liseo. "Alternative Approaches for Estimating Highest-Density Regions". In: *International Statistical Review* (2024). DOI: 10.1111/insr.12592.

[3] 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/biomtc/ujad004.

[4] 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.

[5] N. Deliu. "Multinomial Thompson sampling for rating scales and prior considerations for cali- brating uncertainty". In: *Statistical Methods 3 Applications* 33.2 (2024), pp. 439–469. DOI: 10.1007/s10260-023-00732-y.

[6] 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.

[7] N. Deliu. "Reinforcement learning for sequential decision making in population research". In: *Quality 3 Quantity* (2023). DOI: 10.1007/s11135-023-01755-z.

[8] 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. *(Paper with discussion, paper featured on the Jan 2023 issue cover. Outreach activity: AJPH Podcast – SMART and MRT, emerging methods in public health)*.

[9] 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.

[10] 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.

[11] F. Cottone, N. Deliu, G. S. Collins, A. Anota, 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.

[12] F. Sparano, N. K. Aaronson, F. Cottone, A. Piciocchi, E. La Sala, A. Anota, 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.

[13] N. Deliu, F. Cottone, G. S. Collins, A. Anota, 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.

[14] A. Ousmen, C. Touraine, N. Deliu, F. Cottone, F. Bonnetain, F. Efficace, A. Brédart, C. Mollevi, and A. Anota. "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.

P<small>EER-REVIEWED</small> CONꞦᴇʀᴇɴᴄᴇ <small>PROCEEDINGS</small>

[15] 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 Fiftheen International Conference on Learning Analytics 3 Knowledge (LAK25): Learning Analytics in the Age of Artificial Intelligence*. Dublin, Ireland: ACM, 2025. *(Accepted; Full-length paper in AI-ML Conference)*.

[16] 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 Cham, 2024. I<small>SBN</small>: 978-3-031-64349-1.

[17] 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. D<small>OI</small>: 10.1609/aaai.v38i21.30328. *(Full-length paper in Top-tier AI-ML conference; 2024 acceptance rate = 23.7%)*.

[18] 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 3 Knowledge (LAK24): Learning Analytics in the Age of Artificial Intelligence*. Kyoto, Japan: ACM, 2024. I<small>SBN</small>: 9798400716188. *(Full-length paper in AI-ML Conference; 2024 acceptance rate = 26.1%)*.

[19] 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. D<small>OI</small>: 10.1609/hcomp.v11i1.27544. *(Full-length paper in Top-tier AI-ML conference; 2023 acceptance rate ≈ 25%)*.

[20] 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. I<small>SBN</small>: 9788891935618. *(Short paper extented to journal article [2])*.

[21] 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. I<small>SBN</small>: 9781450393522. D<small>OI</small>: 10.1145/3531146.3533154. *(Full-length paper in Top-tier AI-ML conference; 2022 acceptance rate ≈ 24%)*.

[22] 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. I<small>SBN</small>: 9788891932310. *(Short paper extented to journal article [5])*.

[23] 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. I<small>SBN</small>: 9788891910233. *(Best poster award)*.

B<small>OOK</small> CHAPTERS

[24] 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)*.

[25] N. Deliu. "Multiculturality and Interculturality: A Qualitative Analysis of the Perspective of Focus Group Participants". In: *Education in Multiculturality, Education to Interculturality. 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. I<small>SBN</small>: 978-88-401-9061-7.

[26] 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.

PHD THESIS

[27] 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, Liseo, B. *The Interplay between Bayesian Inference and Conformal Prediction: Towards a Bayesian Conformal Inference Framework*

Deliu, N, Liseo, B. *Conformal Methods in Official Statistics: Perspectives and Challenges*

Deliu, N, Falorsi, PD, Falorsi, S., Chianella, D, Alleva, G. *Evaluating the Accuracy of Register-based Official Statistics with an Application to the Attained Level of Education*

Liu, X., Deliu, N., Chakraborty, T., Bell, L., and Chakraborty, B., *Thompson sampling for zero-inflated count outcomes with an application to the Drink Less mobile health study*. Arxiv Preprint: https://arxiv.org/abs/2311.14359

Deliu, N. and Villar, S.S., *Finite-sample and asymptotic validity of a novel design-based test statistic for response-adaptive randomisation.*

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

Jones, R.J., De Bie, E.M.D.D., Ng, A.Y.K., Dunmore, B.J., Deliu, N., et al. *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

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 3 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 @ **ICSDS2023**, 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, Brusseles 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**

<u>OUTREACH ACTIVITIES</u>

- 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

<u>DEVELOPMENT OF R PACKAGES</u>

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 [2]: Deliu and Liseo, 2024)

January 28, 2025