SDS Statistica e Data Science

MINISTERO DELLA CULTURA — DIREZIONE GENERALE ARCHIVI — Soprintendenza Archivistica e Bibliografica della Campania — ARCHIVIO DI STATO di Caserta

Università degli Studi della Campania *Luigi Vanvitelli*



Caserta, March 30-31 – April 1, 2026

https://sds2026.sis-statistica.it/

SIS-SDS2026 PROGRAMME	
MONDAY, 30 March 2026	**DAY 1**
8:30 - 10:30	**Registration**
10:30 - 11:10	**Opening cerimony**
11:10 - 12:10	**SP1 - Specialised Sessions**
SALA CONFERENZE	**S1 - CLADAG: Statistical Aspects of Fairness** Chair: Grilli, L. (Univ. f Firenze) 1. Some statistical considerations on fairness pre-processing, in-processing, and post-processing strategies *Gottard, A.* 2. FairRF: Multi-Objective Search for Single and Intersectional Software Fairness *D'Aloisio, G.* 3. Supporting Fair Decision-Making with Bayesian Networks: an application to Gender Equality in Italy *Musella F., Vicard P., Mecatti F., and Giammei L.*
SALA MARIA AMALIA DI SASSONIA	**S2 - Data Overlap** Chair: Torelli, N. (Univ. of Trieste) 1. Distributional Overlapping: From Effect Size to Permutation-Based Tests *Calignani, G., Perugini, A. and Pastore, M.* 2. Distributional Overlap and Oversampling in Imbalanced Binary Classification *Di Credico, G., Pennella, L. and Torelli, N.* 3. Overlapping in time series clustering *Conversano C.*
SALA MARIA CAROLINA D'ASBURGO	**S3 - Environmental Data Science** Chair: Scepi, G. (Univ. of Napoli Federico II) 1. Forecasting annual CO2 emissions of Italian municipalities with cross-learning and clustering *Mattera R., Borrata G., Montero Manso P.*

	2. Field Validation of Low-Cost PM Sensors for the RESPIRO Project *Doghmi S., Maranzano P., Gualtieri M., Ferrero L., Mantecca P., Beltrame L., Dellarole E.* 3. A statistical approach on environmental data towards a Digital Twin of Volturno river transitional water system *Pacifico L., D'Adamo R., Matano F., Gnasso A., Scepi G.* 4. An Uncertainty Analysis Approach for a Composite Energy Efficiency Index *Bonnini, S., Borghesi, M., Giacalone, M., Piscopo, G.*
12:10 - 13:00	**C1 - Contributed Sessions**
SALA MARIA AMALIA DI SASSONIA	C1A - Clustering and Unsupervised Learning Methods Chair: Plaia, A. (Univ. of Palermo) 1. Feature explainability in bagged clustering *Quetti F., Ballante E., Giudici P., Figini S.* 2. Clustering in Laplacian Embeddings via K-lines Algorithm *Di Nuzzo C., Farnè M.* 3. Hierarchical Functional Clustering with Optimal Transport for Multi-Source Surveillance Data *Sabri M., Balzanella, A., Verde, R.*
SALA CONFERENZE	C1B - Bayesian and Latent Variable Models Chair: Egidi, L. (Univ. of Trieste) 1. Computational approaches for Bayesian inference in copula-based hierarchical models: An application to doping detection *Vyltanioti, P., Masillo, E., Deliu, N., Karlis, D.* 2. Application of a Copula-Based Bayesian Framework to Athlete Biological Passport Data *Masillo, E., Vyltanioti, P., Liseo, B.* 3. Bayesian methods against gender-based violence: modelling misreported data *Arima, S., Polettini S.*
SALA MARIA CAROLINA D'ASBURGO	C1C – UNINOVIS Alliance project - Causal Modelling and Optimization techniques in the Age of AI: Methods and Applications Chair: Balzanella, A. (Univ. of Campania Luigi Vanvitelli) 1. Bridging Econometrics and AI: A Constrained Neural Architecture for Transparent Asset Valuation *Jasas, M.* 2. Modified DEMATEL for Causal Modelling of Likert-Scale Survey Data *Sakalauskas, V., Kriksciuniene, D., Luksaite, D.* 3. Cat Swarm Optimization Techniques for GANs Fine Tuning *Marulli, F., Campanile, L.*

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13:00 - 14:30	**Lunch**
14:30 - 15:30	**SSP2**
SALA MARIA AMALIA DI SASSONIA	**S4** - Composite Indices in Complex Surveys: Methodological Challenges and Innovations Chair: Davino, C. (Univ. of Napoli Federico II) 1. Constructing a Hierarchical Composite Indicator of Educational Poverty *Davino C., Romano R., and Gerghi, M.* 2. Measuring Educational Poverty at the Local Level: A spatially geographically weighted Fay-Herriot model *Schirripa Spagnolo, F., Giusti, C., Moretti, A., Salvati, N.* 3. A three-way data model for constructing dynamic poverty indicators: an SDG1 case study *Bottazzi Schenone M., Vichi M.*
SALA CONFERENZE	**S5**- ISI-SDS Data science for dealing with alternative data sources and causal inference Chair: Carfagna, E. (Univ. of Bologna) 1. Small area estimation with big data and alternative data sources *Pratesi, M.* 2. Exploring the potential of Bootstrap for data integration from probability and non-probability sources *Mecatti, F.* 3. From Correlation to Causation in Machine Learning: A Systematic Review *Banouar, O.*
SALA MARIA CAROLINA D'ASBURGO	**S6** - Bayes and Data Science for Social Good Chair: Liseo, B. (Sapienza Univ. of Roma) 1. Modeling long-term graduation students: a hidden Markov model approach *Pandolfo, E., Deliu, N., Liseo, B., Tancredi, A.* 2. Real-time small area estimation of food security in Zimbabwe *Ishida, S.* 3. Enhancing modelling of food security through Bayesian inference *Panero F., Ishida, S.*
15:30 - 15:50	**Coffee Break**
15:50 - 16:50	**C2 - Contributed Sessions**
SALA MARIA AMALIA DI SASSONIA	C2A – Statistical Learning: selection, fairness and uncertainty Chair. Rosanna Verde (Univ. of Campania Luigi Vanvitelli) 1. Category-specific variable selection in multinomial regressions based on ranking *Iannario M. , Niglio M., Petti D., Restaino M.*

	2. Evaluating Unsupervised Feature Selection for Redundancy in Genomic Data *Segura, E., Giordano, S., Adornetto, C.* 3. Active Learning for Fairness Utility: An Application to the ISTAT Consumer Confidence Survey *Lima R.*
SALA MARIA CAROLINA D'ASBURGO	C2B – Spatio-Temporal Modeling and Forecasting Chair: Conversano (Univ. of Cagliari) 1. Traffic forecasting: A comparative study of Deep Learning and Spatio-Temporal models *Cellitti, F.* 2. Deep variography: bridging geostatistics and transformers for interpretable spatio-temporal forecasting *Calleo, Y., Alaimo, L.* 3. Monitoring and Modeling Delays in Railway Transportation Networks *Colombo, S., Gimenez-Zapiola, A., Vantini, S., Ieva, F.*
SALA CONFERENZE	C2C - Statistical Modelling for Social Impact and Public Policy Chair: Bruno M. (ISTAT) 1. Spatial patterns of health inequality across EU regions ù *Cafieri, S., Cinquegrana, G.* 2. A Rank-Based Composite Index of Municipal Resilience in Italy *Greco, M., Ieva, F.* 3. Forecasting Italian Inflation with LLM-Based Adjustments *Pugliese, F., Pappagallo, A., Borrata, G., Cafieri, S., Mattera, R.*
16:50 - 19:00	**Reggia Palace visit**

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Università degli Studi della Campania *Luigi Vanvitelli*

SIS Società Italiana di Statistica

SDS 2026

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SIS-SDS2026 PROGRAMME	
TUESDAY, 31 March 2026	**DAY 2**
9:00 - 10:00 SALA CONFERENZE	**Plenary Session** Chair. Rosanna Verde (Univ. of Campania Luigi Vanvitelli) *Nalini Ravishanker*, University of Connecticut, USA Pseudo-causal Assessment of Intervention Impact in Time Series using Classes of Gaussian Process Models
10:00 - 10:30	**Coffee Break**
10:30 - 11:30	**SP3 - Specialised Sessions**
SALA MARIA AMALIA DI SASSONIA	**S7** - SVQS: Statistics and data science for sports data analysis Chair: Lucadamo, A. (Univ. of Sannio) 1. Evaluating Forward Contributions in Football: The PRS Statistic Approach *Cefis M., Metulini R., Carpita M.* 2. Data-driven statistical methods for new rankings of soccer teams *Cerqueti R., Ficcadenti V.* 3. Classifying styles of play in football through pitch-based passing networks and archetypal analysis *Palazzo L., Rondinelli R., Ievoli R., Gallo M., Palumbo F.*
SALA MARIA CAROLINA D'ASBURGO	**S8** - SIS-Bayes - Bayesian methods for complex applications Chair: Macrì Demartino, R. (Univ. of Trieste) 1. Bayesian causal inference for evaluating the impact of audits in high-risk economic sectors *Cozzucoli L. A.* 2. Bayesian Conformal Prediction for Small-Area Estimation with Proportion Data *Deliu N.* 3. Transporting Principal Causal Effects Across Strata: A Bayesian Causal Inference Approach *Ballerini V.*
SALA CONFERENZE	**S9** - AI in Official Statistics: challenges and opportunities. Chair: Luzi, O. (ISTAT) 1. Measuring Sectoral Exposure to Artificial Intelligence Using Patent Embeddings *Massacci G., Bruno M.*

	2. From Company Websites to Official Product Codes: A Data-Driven Framework for PRODCOM Classification *D. Summa D. D'Amore G.* 3. Machine Learning for Donor Selection in Statistical Data Editing: An Alternative to Distance-Based Search *De Fausti F. , Sacco G., Lipsi R., Reale A., Manzari A.*
11:30 - 13:00	**Round Table**
SALA CONFERENZE	Shaping Data Science Education: Evidence, AI-Driven Tools, and Skills for Official Statistics (Link: https://meet.google.com/bno-imye-jpm) Chair: Pedone, P. (Presidente CUN, Univ. of Campania) - AI-based Extraction of Structured Insights from Academic Regulations: the case of LM-Data *Stefano Montanelli, Sergio Picascia* - Results of the third edition of the Survey on degree programs in the LM-Data class. *Silvia Salini* - The development of new skills and innovative statistical techniques to support a more technology-driven production of Official Statistics: the EMOS experience. *Buono D., Verde R.*
13:00 - 14:10	**Lunch**
14:10 - 15:30	**IS1 - Invited Session**
SALA CONFERENZE	I1 - ENBIS/ISBIS - Statistical Process Monitoring and Interpretable Forecasting for Modern Industrial Systems Chair: Lepore, A. (Univ. of Napoli Federico II) 1. Comparative Strategies for Model Building in Singular Spectrum Analysis: An Application to Electricity Price Forecasting *Mahmoudvand R., Fiori Maccioni A.* 2. The Statistical Engineering Paradigm: Conformal Prediction for Reliable and Interpretable Prediction of Functional Data. *Vantini, S.* 3. A Comparative Analysis of Price Forecasting Methods for Maximizing Battery Storage Profits *Fiori Maccioni A., Sbaraglia S., Mahmoudvand R. , Zedda S.* 4. A Control Chart for Detecting Covariance Changes in Multichannel Profiles



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	Capezza C., Forcina D., Lepore A., Palumbo B.
15:30 - 16:30	**IS2 - Invited Session**
SALA CONFERENZE	I2 - The use of artificial intelligence for the visualisation of data from historical archive repositories Chair: Manzi, F. (Archivio di Stato Caserta) 1. Data Extraction, Record Linkage and Statistical Modeling on Digitized Historical Census Data *Marino, M., Grassia G., Stavolo A., Mazza R.* 2. Measuring Text Similarity in Italian Clinical Discharge Summaries via Embeddings *Speciale M., Albano A., Di Maria C., Sciandra, M., Plaia A., Gallea, R.* 3. Triage KPIs: An Embedding-Based Approach for Detecting Critical Diagnoses and Waiting Time Inefficiencies *Sacco D., Paesano S.*
16:30 - 17:30	**SDS Assembly**
20:00	**Social Dinner**

SIS-SDS2026 PROGRAMME	
WEDNESDAY, 1 April 2026	**DAY 3**
9:00 - 10:00	**SSP4 - Specialised Sessions**
SALA MARIA AMALIA DI SASSONIA	**S10** - LAB DS CINI: Advanced data governance and quality Chair: Ardagna, C. (Univ. of Milano) 1. AI Is Not Neutral: What Happens When Data Are Not Equivalent? *Longo A.* 2. HPC+AI for flood risk alarm nowcasting: an operational showcase demonstrator *Montella R.*



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	4. Physics-Informed Data Governance and Quality Framework for Accelerometer Sensor Networks in SHM Under Data Scarcity *Iacono, M., Liappello, F., Mastroianni, M., Riccio, C., Viscardi, B.*
SALA MARIA CAROLINA D'ASBURGO	**S11** - Robust data Science Chair: Riani, M. (Univ. of Parma) 1. Robust estimation of Celeux & Govaert's parsimonious collection of mixture models. *Mayo Iscar* 2. Robust Statistics using the Monitoring Approach *Corbellini A., Atkinson A. C., Riani M. , Perrotta D. , Todorov V.* 3. Robust Inference for CUB Models *Monti A.C*
SALA CONFERENZE	**S12** - Ordinal data and dimensions reduction issues Chair: Balzanella, A. (Univ. Of Campania) 1. Opening the box: making ESG indicators more interpretable *Agosto A.* 2. How to measure environmental performance and itsimpact on systemic risk: a new data-driven index *Tanda.* *3.* Variable selection in ordinal data models with complex setting *Berger, M., Iannario, M.*
10:00 - 10:30	**Coffee Break**
10:30 - 11:30	**Contributed Sessions / Poster Session**
SALA MARIA AMALIA DI SASSONIA	**C3A** – Robust and Adaptive Learning Algorithms Chiar: Salini, S. (Univ. of Milano) 1. Robust Upper-Tail Prioritization Under Weight Uncertainty: A SMAA-Inspired Framework for Rare-Event Screening *Ferrari, D., Costanzo, D.* 2. A Latent-State-Aware Framework for Non-Stationary UCB Bandits *Cuonzo S., Deliu N.* 3. A Machine Learning Approach to Predict Conflict in Public Administration *Cerise S., Nava C., Tedeschi S.*
SALA MARIA CAROLINA D'ASBURGO	**C3B** - Functional Data and Time Series Regression Chair: Cerchiello, P. (Univ. of Pavia) 1. Milk Traceability via Functional Data Analysis and Machine Learning Techniques

	Pinello D., Sottile, G., Mineo A., Mastrangelo S., Augugliaro L., Cesarani, A. 2. Time Series Extrinsic Regression for Field-level Crop Yield Prediction *Vanacore A., Ciardiello A., Auricchio G., Uccello, L., Izzo, A.* 3. A Spatially-Variant Diffusion Model for MRI Denoising *Teodori F., Testa L.*
SALA CONFERENZE	**C3C** - Statistical Modeling for Textual and Socio-Economic Data Analysis Chair: Bini, M. (European Univ. of Roma) 1. Unsupervised sentiment detection with mixtures of Beta-Liouville Multinomial distributions. *Bilancia, M., Magro, S.* 2. Investigating Class-Level Variability in Synthetic Data Augmentation for Document Classification. *Torri, V., Ieva, F.* 3. The Impact of COVID-19 on Adolescent Mathematics Performance: Evidence from PISA 2022 in Italy, Mexico and the United Kingdom *Zenga, M., Gonzales Luna, A., Marshall, A.* 4. Public corporations and National Recovery and Resilience Plan *Cinquegrana, G., Migliardo, S.*
SALA ACCOGLIENZA	**P1** - Poster Session
11:30 - 12:30	**SP5 - Specialised Sessions**
SALA CONFERENZE	**S13** - Recent Developments in Model-Based Clustering Chair: Ingrassia, S. (Univ. of Catania) 1. Finite mixture modeling for cross-dating tree ring sequences *Melnykov V. and Wang, L.* 2. Beyond Expectation-Maximization: Noise Contrastive Estimation for Prior Shift Correction. *Mangano S.* 3. Modeling Heterogeneous Categorical Sequences with Change Points. *Wang, L, Melnykov V.*
SALA MARIA AMALIA DI SASSONIA	**S14** - Interpretable, Explainable and SAFE Methods in Statistical Data Science Chair: Guarracino, M. (Univ. of Cassino and Lazio Meridionale) 1. Multivariate Coefficients of Variation: a comparative analysis. *Auricchio G., Bernardelli A., Giudici P., Toscani G.* 2. Optimal Ensemble Learning.



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	Giudici P., Polinesi G., Mariani F., Recchioni M.C. 3. Granularity and Hybrid Modeling: a Proposal for Designing Explainable AI for Italian Electronic Health Records. *Santoro M, Lilli L., Paternello S.* 4. Interpretable and Explainable Methods for Statistical Data Analysis: Theory, Tools, and Applications. *Marciano C., Bernhardt Brian D., Maddalena L., Guarracino M.R.*
SALA MARIA CAROLINA D'ASBURGO	**S15** - SIFS - Statistical Physics and Data Science Chair: De Arcangelis, L. (Univ. of Campania Luigi Vanvitelli) 1. Information Diffusion in decentralized financial markets. *Iori G.* *2.* Statistical Mechanics of Transfer Learning. *Gerace F.* 3. A complex systems perspective on success in academic careers. *Livan G.*
12:30 - 13:50	**Lunch**
13:50 - 15:50 SALA CONFERENZE	**Satellite event:** **Artificial intelligence in teaching and spreading statistical literacy** Chair*: Marcello Chiodi (Univ. of Palermo - SIS President)*