Nevena Gligić

PhD Candidate, Statistics — The University of Texas at Austin

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PROFILE

PhD candidate in Statistics at UT Austin. Funded by the NSF–Simons AI Institute for Cosmic Origins (CosmicAI). Research focuses on developing deep generative models for reliable AI under noise, contamination, and distributional shift, with real-world applications, including gravitational waves detection, fraud, medical imaging. Best paper award at STAI-X. Multidisciplinary background bridging mathematics (Manchester), computational finance (UCL), and applied ML research (UT Austin) with both academic and industry collaborators. EU citizen.

EDUCATION

The University of Texas at Austin — Austin, TX (USA)
PhD Statistics (Advisor: Dr. Arya Farahi) — Aug 2022 – May 2027 (exp.)

University College London (UCL) — London, UK
MSc Computational Finance (Final grade: First Class) — Sep 2020 – Sep 2021

The University of Manchester — Manchester, UK
BSc (Hons.) Mathematics (Final grade: Upper Second Class (2:1)) — Sep 2017 – May 2020

RESEARCH EXPERIENCE

The University of Texas at Austin, NSF–Simons AI Institute for Cosmic Origins — Austin, TX (USA)
Graduate Research Assistant — May 2024 – Present

Density-Informed Pseudo-Counts for Calibrated Evidential Deep Learning
P. Carlotti*, **N. Gligić***, A. Farahi. *STAI-X, 2026.* ***Best Paper Award.*** **equal contribution*

- *RQ*: How to make an AI system more reliable under distributional shifts?
- *Approach*: Introduced DIP-EDL, an EDL parametrization that decouples class prediction from uncertainty quantification by separately estimating the conditional label distribution and the marginal covariate density.
- *Applications*: fraud detection, medical diagnosis, autonomous driving, disaster response management.
- *Methods*: normalizing flows (MAF), evidential deep learning (EDL).

Robust-by-Design Distributional Learning from Contaminated Samples
N. Gligić, A. Farahi. *Under review, 2026.*

- *RQ*: How to achieve distributional objectives with contaminated data?
- *Approach*: Proposed CC–MMD (contamination-corrected maximum mean discrepancy), a design-based estimator that combines noisy proxy scores with audited residual corrections to recover the oracle MMD that would have been measured on clean data.
- *Applications*: galaxy population inference with star contamination, LLM-assisted filtering of political content, species-distribution inference with environmental DNA contamination.
- *Methods*: normalizing flows (IAF), VAE, GAN, MLP.

BPSD: Unsupervised Bayesian Probabilistic Signal Detection in Noisy Environments
N. Gligić, A. Farahi. *Ongoing.*

- *RQ*: How to detect signal in a low SNR regime without labels or assumptions on the signal distribution?
- *Approach*: Built an unsupervised framework that explicitly models the data and noise distributions with normalizing flows and uses Bayesian inference to probabilistically detect signal in noise.
- *Applications*: gravitational waves detection, galaxy detection, medical imaging, radar systems.
- *Methods*: normalizing flows (MAF), CNN, GMM, autoencoders.

AI-Driven Utility Monitoring and Anomaly Detection for City-Operated Buildings
N. Gligić, V. Burugu, A. Farahi, M. Kammer-Kerwick. *Ongoing.*

- *RQ*: How to detect extreme energy consumption in city-operated buildings in real time?
- *Approach*: Built a forecasting and anomaly detection pipeline using a foundation model, coupled with an interactive dashboard that links flagged events to estimated cost and CO_2 impact. Collaboration with the City of Austin.
- *Applications*: improved operational efficiency, reduced waste, lower emissions, cut costs.
- *Methods*: Chronos Bolt time-series foundation model, transformers, ARIMA baselines.

Santander Bank UK, via University College London London, United Kingdom
Research Intern Jun 2021 – Sep 2021

Operational Risk Bayes Neural Network *(Master's thesis)*

- *RQ*: What change in operational losses values caused a change in operational risk measures?
- *Approach*: Built and benchmarked several classifying models to identify drivers of operational risk. Presented at the Santander University Engagement Program 2021.
- *Methods*: neural networks, naive Bayes, multinomial logistic regression

ADDITIONAL WORK EXPERIENCE

The University of Texas at Austin Austin, TX (USA)
Teaching Assistant Aug 2022 – May 2024

- Translated complex statistical concepts into simple explanations; provided detailed feedback on students' work.
- Led office hours and one-on-one support for students new to R programming.

Bally's Interactive London, United Kingdom
Campaign Executive Jan 2022 – Jul 2022

- Analyzed and optimized digital campaign performance through data-driven experimentation.
- Studied customer behavior across demographics and day-of-week engagement patterns to tailor campaigns effectively.

AWARDS & FELLOWSHIPS

- **Best Paper Award**, STAI-X (2026)
- **Keller Award**, UT Austin (2026) - "For demonstrating exceptional leadership skills by engaging in academic, research and social community building activities; providing service to the department and university; and supporting other students in the PhD program and serving as a role model."
- **College of Natural Sciences PhD Fellowship**, UT Austin (2022–2027)
- **School of Mathematics Entrance Scholarship**, The University of Manchester (2017)

TALKS & POSTER PRESENTATIONS

- *Lightning Talk*, NSF Site Visit to the NSF–Simons AI Institute for Cosmic Origins (CosmicAI), UT Austin (May 2026).
- *Poster*, The 18th World Meeting of the International Society for Bayesian Analysis (ISBA), Nagoya, Japan (Jun–Jul 2026).
- *Poster*, The 10th Bayesian Young Statisticians Meeting (BAYSM), Chiba, Japan (Jun 2026).
- *Poster*, Deep Learning for Science Summer School, Lawrence Berkeley National Lab (Jun 2025).

LEADERSHIP & INITIATIVES

- **Co-founder – Directed Reading Program in Statistics and Data Sciences (DRP-SDS), UT Austin:** Co-founded the department's first DRP, pairing undergraduates with PhD mentors for independent semester-long research projects.
- **Referee:** AAAI.
- **Reading groups:** Simulation-based Inference (SBI), StatML, Explainable AI (XAI), BART.
- **SDS Social Committee & Recruiting:** PhD student representative; engaged with faculty candidates and admitted students.

TECHNICAL SKILLS, LANGUAGES, INTERESTS

- **Programming:** Python (primary), PyTorch, R, SLURM, MATLAB, LaTeX, Git
- **Methods:** Normalizing flows (MAF, IAF), VAE, GAN, evidential deep learning, transformers, CNN, GMM, autoencoders, time-series foundation models (Chronos Bolt), MLP, ARIMA
- **Languages:** Croatian (Native), English (Fluent), German (Intermediate), Italian (Beginner)
- **Sports:** tennis (former tournament assistant: Wimbledon 2022, Manchester Trophy 2021), Volleyball (UT Austin Intramural, UoM Volleyball Club).