Dixièmes Journées Franco-Chiliennes d'Optimisation
INSA Rouen Normandie, Rouen, France
8-11 July 2025

DIFFERENTIALLY-PRIVATE SYNTHETIC DATA GENERATION: A SADDLE-POINT APPROACH

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Generating synthetic data is one of the key problems in private data analysis. In this talk, I will provide a summary of existing work, together with some novel approaches and results. In particular, we show that for accuracy guarantees based on relative error (i.e, a mixture of additive and multiplicative error), error rates can be made poly-logarithmic in the sample size, data universe size, and the number of linear queries; a result which is provably unattainable in the purely-additive counterpart.

References

[1] B. Ghazi, C. Guzmán, P. Kamath, A. Knop, R. Kumar, P. Manurangsi, S. Sachdeva: *PREM: Privately Answering Statistical Queries with Relative Error*, COLT 2025.

[2] T. González, C. Guzmán, C. Paquette: *Mirror Descent Algorithms with Nearly Dimension-Independent Rates for Differentially-Private Stochastic Saddle-Point Problems*, COLT 2024.

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