Seminar/Talk

TCS Seminar - Differentially Private Continual Counting via Matrix Factorization: Constructions and Lower Bounds

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Host:

Continual counting under pure differential privacy is one of the simplest and most well-studied problems in the continual observation model. Given a binary stream $x_1, \ldots, x_n \in \{0,1\}$, the goal is to release, at each time t, an approximation to the prefix sum $\sum_{i=1}^t x_i$. The entire output sequence must satisfy ϵ-differential privacy, while making the accuracy as good as possible. We consider the maximum expected squared error over all times t as our accuracy score. Very recently, it was shown that the correct asymptotics for this error is $\Theta(\epsilon^{-2} \log^3 n)$ for factorization-based mechanisms.We give a construction using a general matrix factorization mechanism, improving the leading constant for the mean squared error. The mechanism starts from a good-quality low-dimensional factorization and lifts this factorization to arbitrarily large dimensions.On the lower-bound side, we show a very simple $\Omega(\epsilon^{-2}\log^3 n)$ lower bound for the special case of factorizations whose matrices have entries in {0, 1}.This talk covers a subset of our paper with Nikita Kalinin (https://arxiv.org/abs/2607.08963)

Thursday, September 24, 2026 02:00pm - 03:00pm
Mondi Seminar Room 3, Central Building

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.