PINQ: Privacy Integrated Queries

Let M(**A**): repeat until happy …

1. Use the exp mech to pick a PINQ program **p**,
2. Evaluate **p** on the the actual data **A**. (call it **m**).
3. Update estimated distribution **D**, using MCMC.

MCMC: for a long time:

choose a random D'

update D to D' with probability

$$P(m \mid D') / P(m \mid D).$$

$$\textbf{score}(\textbf{A}, \textbf{p}) = -\log \textbf{Pr}(\ \textbf{p(A)} \mid \textbf{D}\ ).$$

“Theorem”: works great, if you run for exponentially long.

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