Factorized Databases: Past and Future Past

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Abstract. In this talk I will overview the FDB project at Oxford on succinct, lossless representations of relational data that I call factorized databases. I will first present a characterization of the succinctness of results to conjunctive queries and how factorizations can speed up query processing.I will then comment on how this succinctness characterization relates to seemingly disparate results on: readability of provenance polynomials, representation systems for incomplete information, one-pass query evaluation using finite cursor machines, tractability in probabilistic databases, and parallel query evaluation with one synchronization step. I will conclude with two near-future projects that brought me back to factorized data representations: scalable machine learning over relational data and distributed database systems with low communication cost.