Q. Describe briefly what is a probabilistic database.

A probabilistic database is an uncertain database in which the possible worlds have associated probabilities. Many applications benefit from finding diamonds in imprecise data, without having to clean the data first. The goal of probabilistic databases is to make uncertainty a first class citizen and reduce the cost of using such data, or (more likely) enable applications that were otherwise prohibitively expensive.

Q. What are some key applications of probabilistic databases?

Sensor data management

Data Cleaning

Knowledge representation

Data integration

Q. Why do you think that probabilistic databases have not been widely adopted yet?

The major challenge in a ProbDMS is that it needs both to scale to large data volumes, a core competence of database management systems, and to do probabilistic inference, which is a problem studied in AI.