Relational database management systems (RDBMSs) are powerful because they are able to optimize and execute queries against relational databases. However, when it comes to NLIDB (natural language interface for databases), the entire system is often custom-made for a particular database. Overcoming the complexity and expressiveness of natural languages so that a single NLI can support a variety of databases is an unsolved problem. In this research, we show that it is possible to separate data-specific components from latent semantic structures in expressing relational queries in a natural language. With the separation, transferring an NLI from one database to another becomes possible. We develop a neural network classifier to detect data-specific components and an adversarial mechanism to locate them in a natural language question. We then introduce a general-purpose transfer-learnable NLI that focuses on the latent semantic structure. We devise a deep sequence model that translates the latent semantic structure to an SQL query. In this talk, I will also cover my background and my vision for the Department of Data Science at NJIT.

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