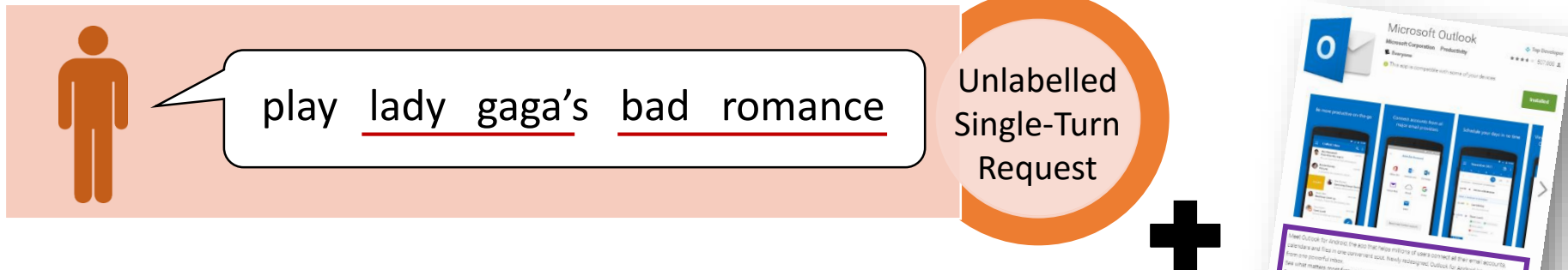


# Matrix Factorization with Domain Knowledge and Behavioral Patterns for Intent Modeling

Yun-Nung (Vivian) Chen, Ming Sun, Alexander I. Rudnicky, and Anatole Gershman

Can a dialogue system automatically learn user intents from unlabelled dialogues?



Domain Knowledge

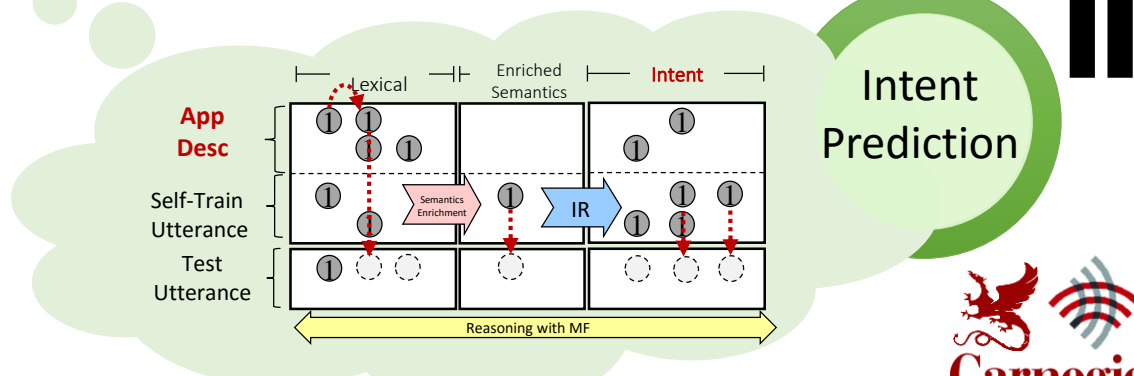
**Lady Gaga**  
 Stefani Joanne Angelina Germanotta (née) (born March 28, 1983) is an American singer, songwriter, and actress. She is widely recognized for her distinctive style, which includes elaborate costumes and theatrical performances. Her music is characterized by its electropop sound and her powerful, raspy voice. She has released several studio albums, including *The Fame*, *The Monster*, and *Artpop*. Her song "Bad Romance" is one of her most popular tracks.

**Bad Romance**  
 "Bad Romance" is a song by American singer Lady Gaga from her first extended play, *The Fame* (2008). It was written and produced by Gaga and RedOne. The song is a blend of pop, dance, and industrial music. It features a chorus that repeats "Dance like nobody's watching." The song was released on October 25, 2009, and became a major hit, peaking at number one on the *Billboard* Hot 100. It is known for its provocative lyrics and Gaga's iconic performance style.

... is an American *singer*, *songwriter*, and *actress*.  
 ... is a *song* by ...



Spoken Dialogue System / Intelligent Assistant



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