

Look before you Hop: Conversational Question Answering over Knowledge Graphs Using Judicious Context Expansion

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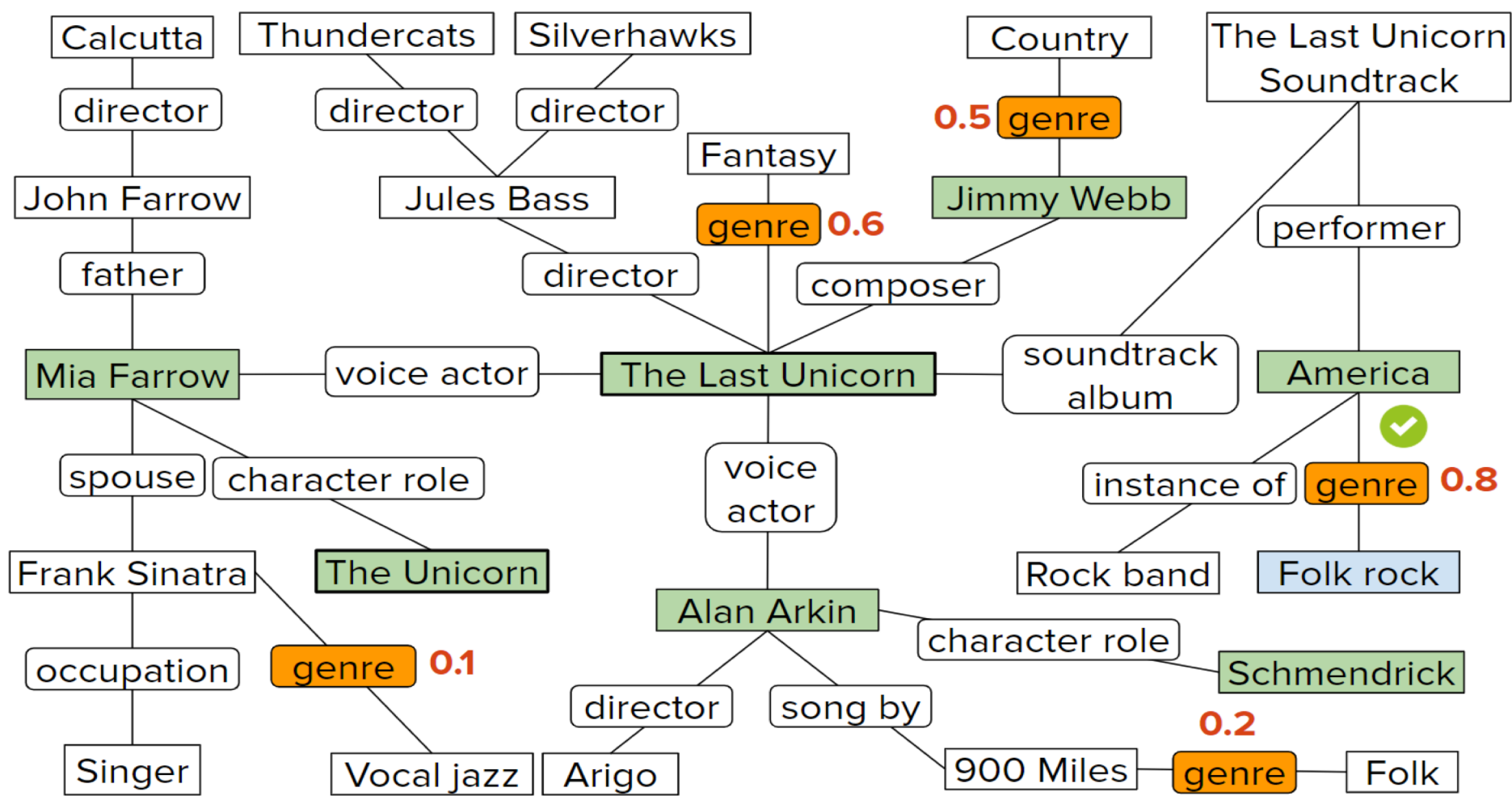
CONVEX enables any standalone KB-QA system to answer conversations

MOTIVATION

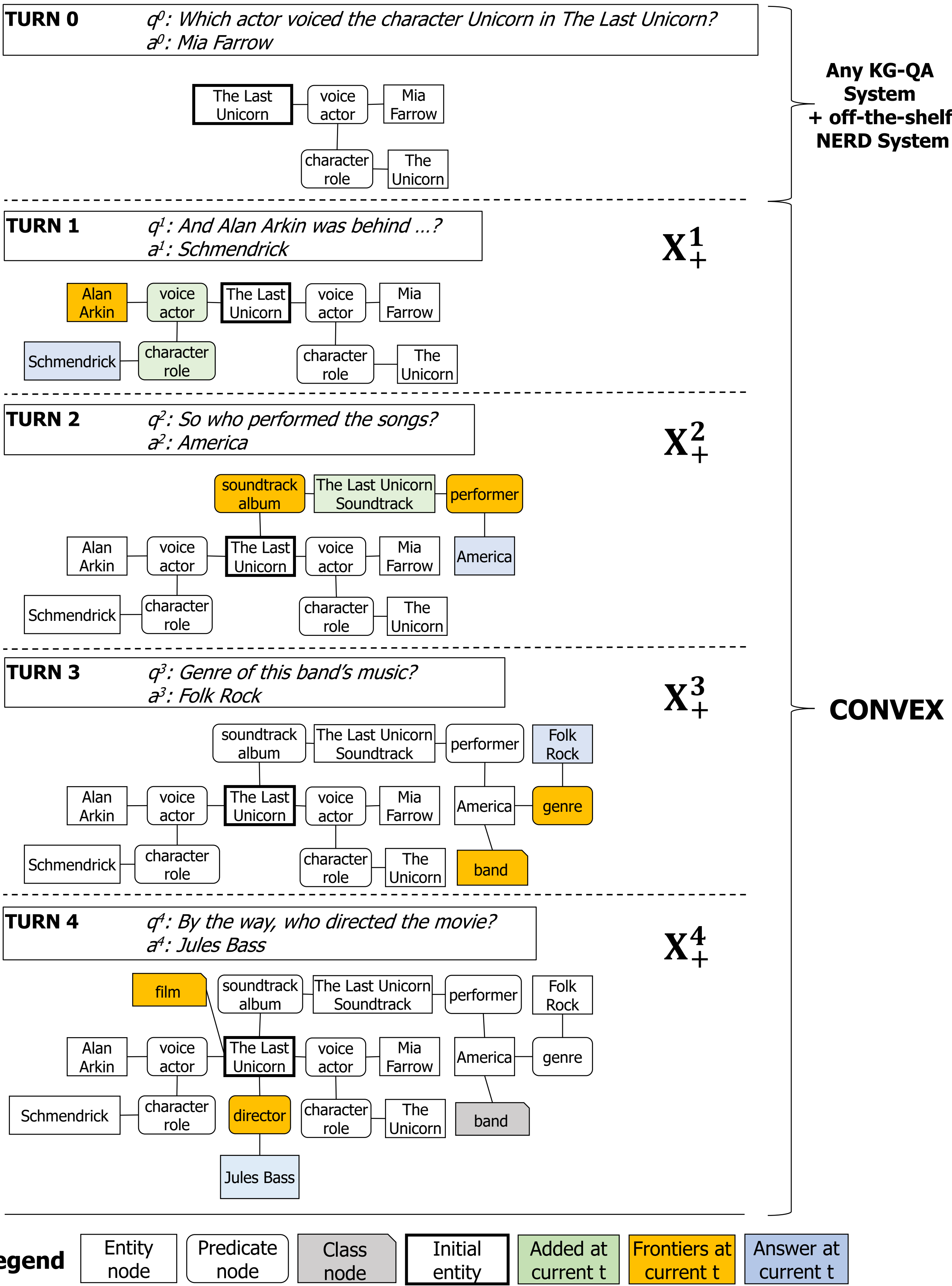
- ★ Users issue **series of questions** on specific topic
- ★ In a natural interaction setting, follow-up questions are **incomplete** with information intentionally left out
- ★ State-of-the-art KG-QA can not handle **incomplete** questions without cue words

APPROACH

- ★ First question **establishes** a conversation context
- ★ Context is **expanded judiciously** by turns
- ★ **Frontier nodes** define the expansion border
- ★ **Question relevance, context relevance** and **KG priors** are important signals in frontier node determination
- ★ **Answer** is in close proximity to **frontier nodes**
- ★ **CONVEX** is completely **unsupervised** and can **enable any KG-QA system to handle ad-hoc conversations**



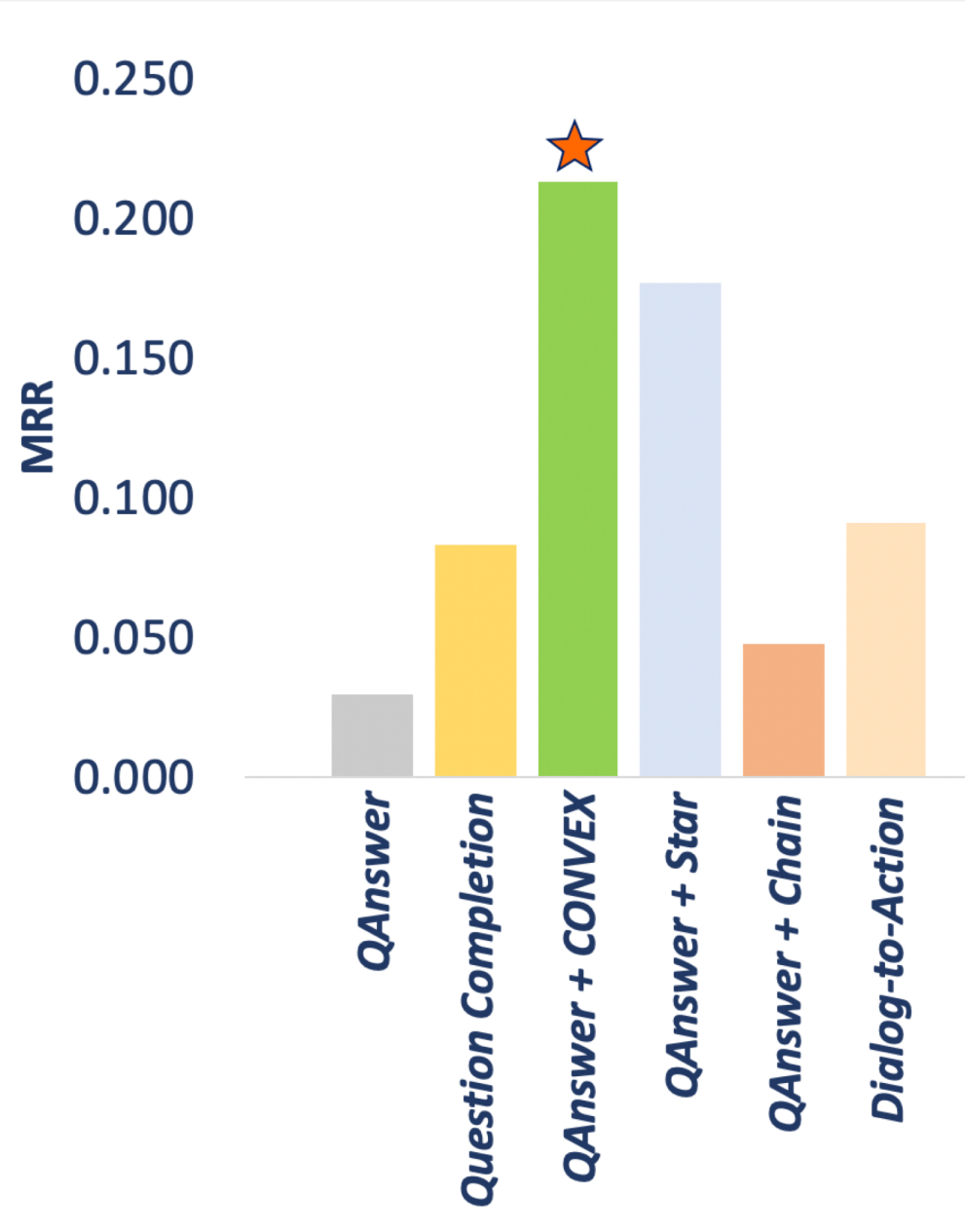
An illustration of the ambiguity in frontier node selection and how context relevance can help.



ConvQuestions: realistic benchmark on Conversational KG-QA

Books	Movies	Soccer	Music	TV Series
When was the first book of the book series The Dwarves published? 2003	Who played the joker in The Dark Knight? Heath Ledger	Which European team did Diego Costa represent in the year 2018? Atletico Madrid	Led Zeppelin had how many band members? 4	Who is the actor of James Gordon in Gotham? Ben McKenzie
What is the name of the second book? The War of the Dwarves	When did he die? 22 January 2008	Did they win the Super Cup the previous year? No	Which was released first: Houses of the Holy or Physical Graffiti? Houses of the Holy	What about Bullock? Donal Logue
Who is the author? Markus Heitz	Batman actor? Christian Bale	Which club was the winner? Real Madrid C.F.	Is the rain song and immigrant song there? No	Creator? Bruno Heller
In which city was he born? Homburg	Director? Christopher Nolan	Which English club did Costa play for before returning to Atletico Madrid? Chelsea F.C.	Who wrote those songs? Jimmy Page	Married to in 2017? Miranda Cowley
When was he born? 10 October 1971	Sequel name? The Dark Knight Rises	Which stadium is this club's home ground? Stamford Bridge	Name of his previous band? The Yardbirds	Wedding date first wife? 19 June 1993

RESULTS



★ Evaluation on our **ConvQuestions** benchmark