Why a Naive Way to Combine Symbolic and Latent Knowledge Base Completion Works Surprisingly Well

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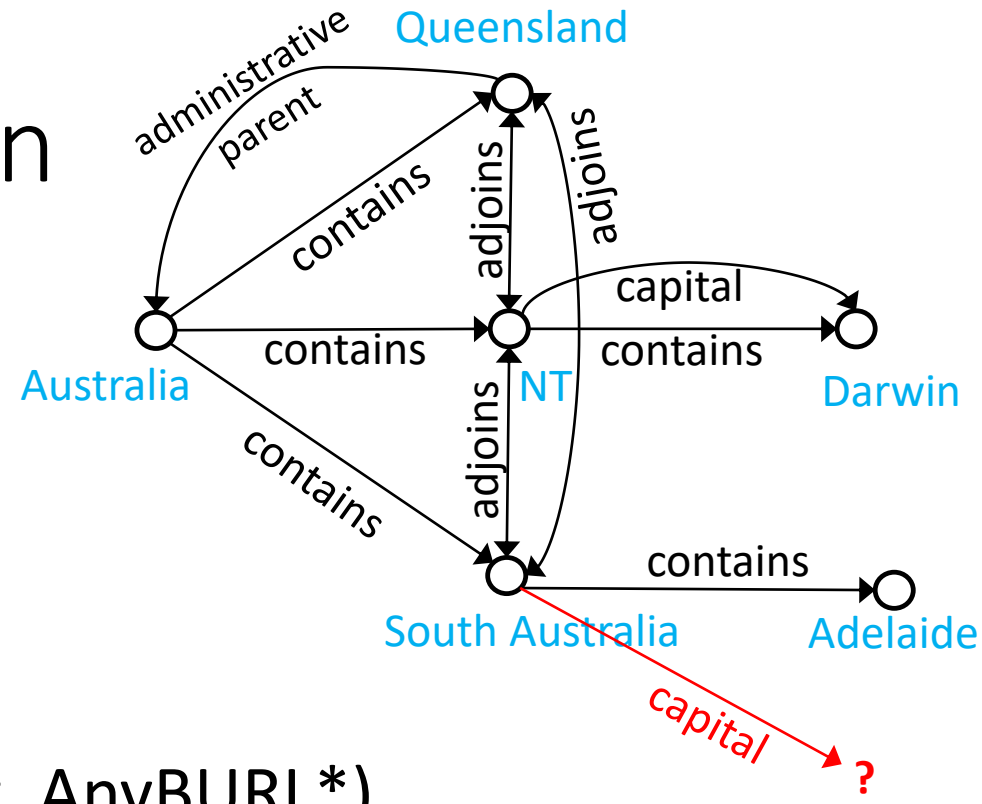
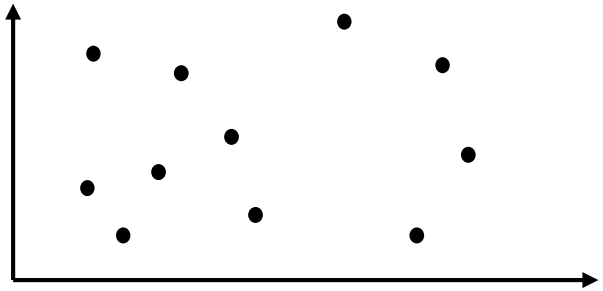
Knowledge Graph Completion



- Knowledge Graph Embeddings (KGE)

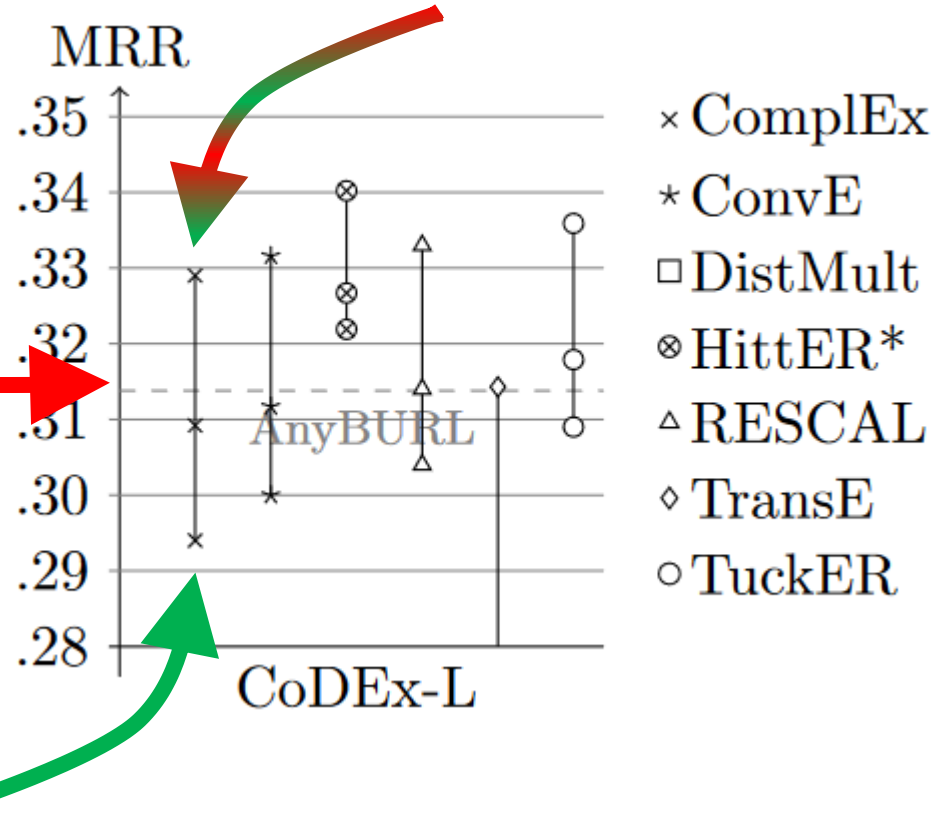


- Learning Rules as a Symbolic Approach (e.g. AnyBURL*)
  - $contains(X, Y) \leftarrow contains(X, A), contains(A, Y)$ [0.659]
  - $contains(X, Y) \leftarrow administrativeparent(A, X), adjoins(A, B), capital(B, Y)$ [0. 237]
  - $capital(X, Y) \leftarrow contains(X, Y)$ [0.012]

* Meilicke, Wudage, Ruffinelli, Stuckenschmidt: Anytime bottom-up rule learning for knowledge graph completion. IJCAI 2019

Results

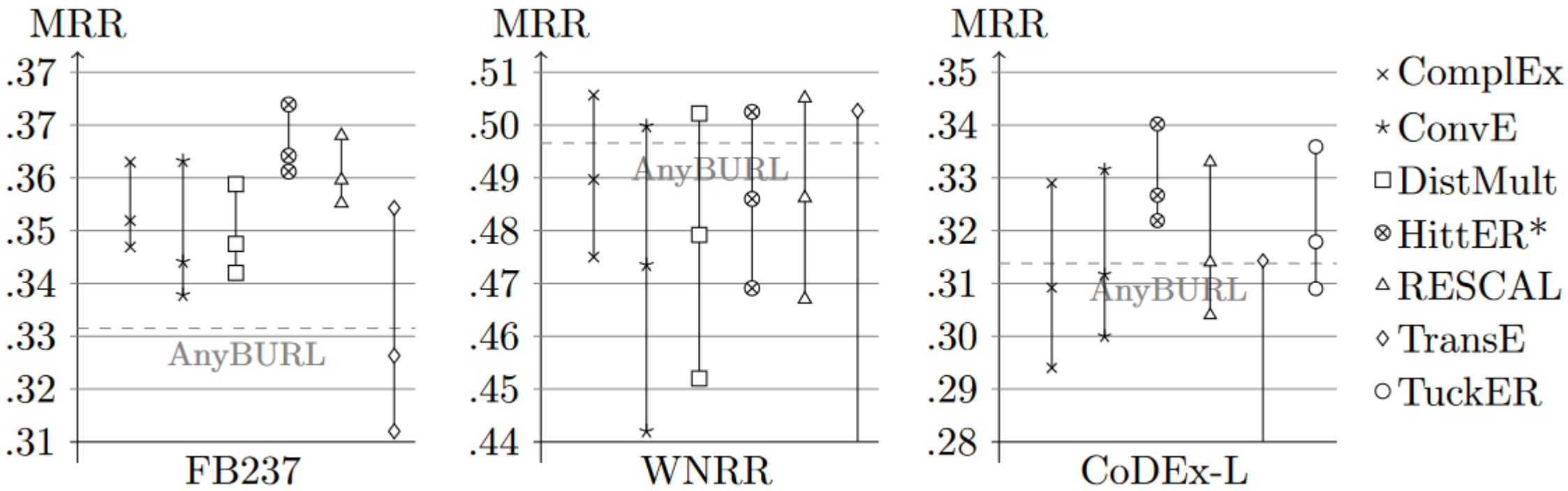
combination of both (our method)



results of rule learning approach AnyBURL

results of KGE model ComplEx

Results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AnyBURL
CoDEx-L
ComplEx
ConvE
DistMult
HittER*
RESCAL
TransE
TuckER

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