Temporal Graph Approach

for Facebook's bAbI toy QA tasks

ThammeGowda Narayanaswamy

**Group 18** Aditya Ramachandra Desai

Ravi Raju Krishna

Goals

- Learn to build a Question Answering System
- Facebook AI Research(FAIR) bAbI toy tasks *
  - Synthetic dataset
  - Has 20 different question types
- Develop a Q&A system to answer 3 question types:
  - 1 supporting fact type
  - 2 supporting facts type
  - YesNo type
- Develop a novel method that is easy to explain (unlike RNNs)
- Evaluate Q&A system.

Demo
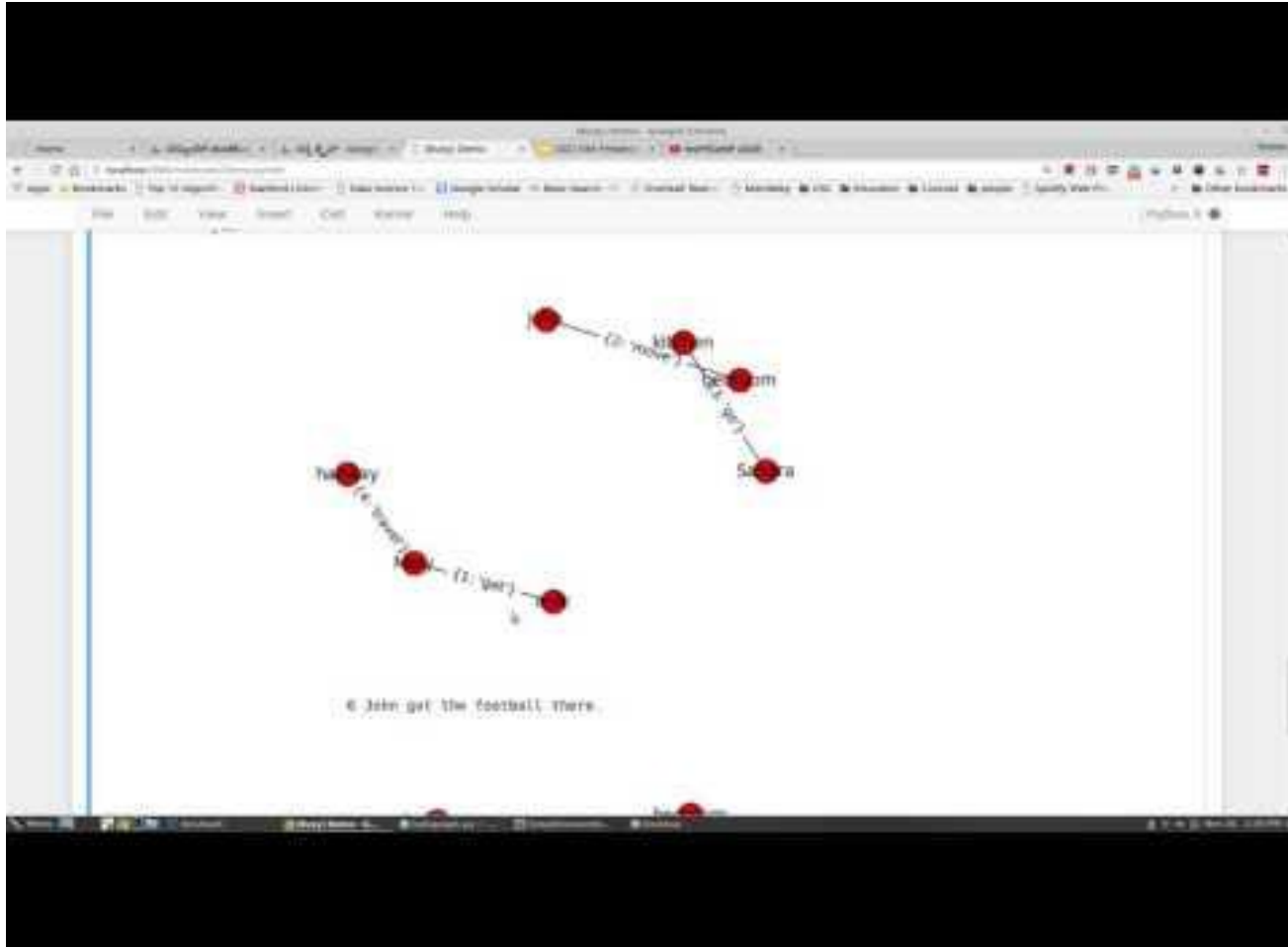
Methodologies

- Literature Review.
  - Analysed approach of RNNs and LSTMs.
- Developed a novel approach using Temporal Graphs.
- Reasoning based on traversal in Temporal Graph
- Word embeddings to classify actions
- Interactive mode with speech synthesis and template based answer generation.

Temporal Graph

Temporal Graph for babl Task 2 : Where is Object?
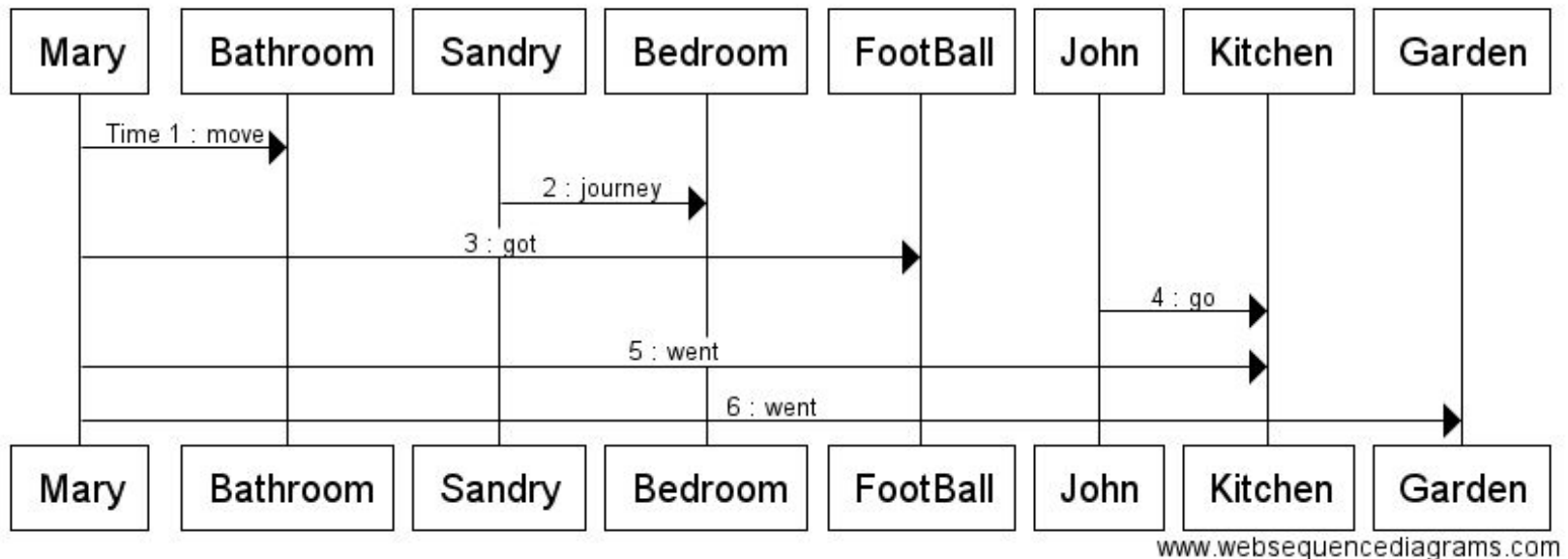
1 Mary moved to the bathroom.
2 Sandra journeyed to the bedroom.
3 Mary got the football there.
4 John went to the kitchen.
5 Mary went back to the kitchen.
6 Mary went back to the garden.
7 Where is the football?   garden   3 6

Evaluation

- Test dataset had 1000 QA pairs for each type
- Accuracy = |Correct_Answers| / |Total_Questions|
- Comparison with Facebook's LSTM and other recent improvements

	FB LSTM[#]	Stephen Merity's RNN[#]	Our score
1 Supp. Facts	50%	52.1%	100%
2 Supp. Facts	20%	37.0%	100%
Yes No	48%	50.7%	100%

THANK YOU

QUESTIONS ?

Code Repo:

https://github.com/raviraju/NLP_QA_Project

Demo Video:

https://www.youtube.com/watch?v=WnN6i4ODGHM