Enhancing Semantic Cognition through RNN-based Question Answering

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Introduction

Semantic cognition refers to the aspect of cognitive processing that involves the understanding of meanings, relationships, and properties of objects and concepts. It encompasses a wide range of mental processes related to the comprehension and use of knowledge about the world. This project aims to reimagine the Rogers and McClelland network for semantic cognition by adopting a more contemporary neural network architecture, specifically utilizing a Recurrent Neural Network (RNN) or a better language model for question-answering.

2. Objectives:

- Develop a neural network architecture for semantic cognition based on RNNs.
- Train the model to answer yes/no questions in natural language, leveraging a set of facts similar to those in the Rogers and McClelland model.

3. Methodology:

a. Data Preparation:

- Curate a dataset of yes/no questions related to a specific domain of knowledge.
- Annotate the dataset with correct binary answers based on established facts.

b. Model Architecture:

- Design an RNN-based architecture capable of encoding natural language questions and producing binary answers.
- Implement mechanisms for dynamic memory and attention to capture contextual information.

4. Conclusion:

This project aims to advance our understanding of semantic cognition by leveraging RNN-based question answering. By studying the developmental dynamics and robustness of the model, we anticipate uncovering valuable insights that could contribute to the improvement of cognitive models and their applications in various domains.