Chapter 1

Introduction

Here is a test reference [6]. As the general human knowledge base grows, so does the need of storing it in a format that is readable and digestible by a computer. As such, knowledge graphs play a very significant role today in how computer store information and digest it. Generally speaking, knowledge graphs are generated by painstaking manual human effort. This has changed with the advent of Large Language Models that can now be used to augment currently existing knowledge graphs [6]

1.1 Knowledge Graphs

There are multiple definitions of knowledge graphs. The widely known one comes from Google's popularization of the word in 2012 [4] where the authors imply that the knowledge that Google contains is accessible via the Google knowledge graph. On the flip side, authors describe knowledge graphs as RDF graphs (a set of RDF triples) [2]. For our purposes, we will describe knowledge graphs as a set of RDF triples that contain a subject, a property and an object.

1.2 Commmon Sense Knowledge Graphs

Commonsense knowledge plays a crucial role today in many machine learning applications including natural language processing and computer vision. Commonsense is often provided via a number of sources dependening on the application. In order to provide a common source that can play multiple roles, CommonSense Knowledge Graphs (CSKGs) were born [3].

1.3 Large Language Models

Language models, in essense, are probablity distributions over sequences of words [5]. They are used for a variety of purposes that range from the simple such as tab completion to sophisticated text generation and reviewing human

written translations. With the advent of larger and more sophisticated language models such as GPT-3[1], the scope of usefuless for language models has expanded significantly. One such use is in the augmentation of currently existing commonsense knowledge graphs [6]. This kind of usage requires that large language models (LLMs) such as GPT-2 be trained on the task of knowledge generation. As per West *et al.*, language models fail to express common sense knowledge when prompted in a zero-shot manner. As such, the authors converted the models to COMET models by training them on a knowledge graph. We suspect, such training, while providing additional capabilities for knowledge graph generation, reduces other language modelling capabilities of the trained model.