Exploring Attention Patterns and Neural Activations in Transformer Architectures for Sequence Classification in Context Free Grammars

Entregado como requisito para la obtención del título de Ingeniería en Sistemas

Matías Molinolo De Ferrari - 231323

Tutores: Dr. Sergio Yovine, Franz Mayr

2024

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Yo, Matias Molinolo De Ferrari, declaro que el trabajo que se presenta en esta obra es de mi propia mano. Puedo asegurar que:

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Agradecimientos

{DEDICATORIA}

{AGRADECIMIENTOS}

Abstract

Cuerpo del Abstract.

Abstract Español

Cuerpo del Abstract.

Palabras clave

tag1; tag2; tag3

Key words

tag1; tag2; tag3

Contents

1 Introduction

Large Language Models (LLMs) have been a topic of interest in the field of Computer Science for the past few years, and more recently, with the release of Chat-GPT [1] by OpenAI, they have become a topic of interest for the general public too.

These models are based on an architecture called Transformer [2], a type of Artificial Neural Network (ANN) well suited to process sequences, such as text. These models have grown exponentially, as seen in 1.1, both in size and complexity, in the last years, and have shown to achieve state-of-the-art results in a wide variety of Natural Language Processing (NLP) and Natural Language Understanding (NLU) tasks.
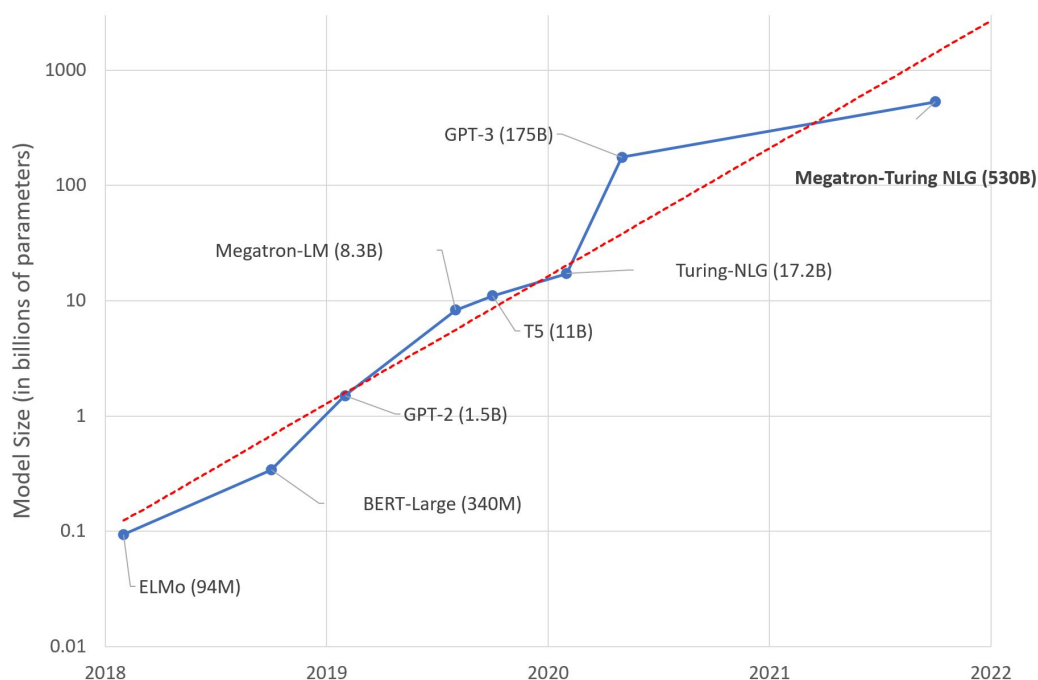

Figure 1.1: Model Sizes (2018–2021) [3]

However, despite their state-of-the-art performance, the inner workings of these models are not yet fully understood and these models are still considered opaque or *black-box* [4], which is a problem for their adoption in critical applications, such as healthcare or finance where decisions need to be explainable and interpretable.

The objective of this thesis is to explore the attention patterns and neural activations in Transformer architectures for sequence classification, more specifically, in context-free grammars.

2 Bibliography

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3 Annexes

3.1 Annex 1

3.2   Annex 2