# Chatbot lower back pain

**Fontys** Paramedisch

## The Project

This project is about non-specific acute lower back pain. It was started by Fontys because inconsistency is a large problem in the treatment of lower back pain.

Back pain is one of the leading causes of years lived with disability. That is why management is important both for patients and our society.

To aid the management of back pain, we were asked to develop a system that can answer follow up questions of patients and provide them with extra guidance. Through the use of language models.



- Cervical spine
- Thoracic spine
- Lumbar spine
- Sacrum
- Coccyx
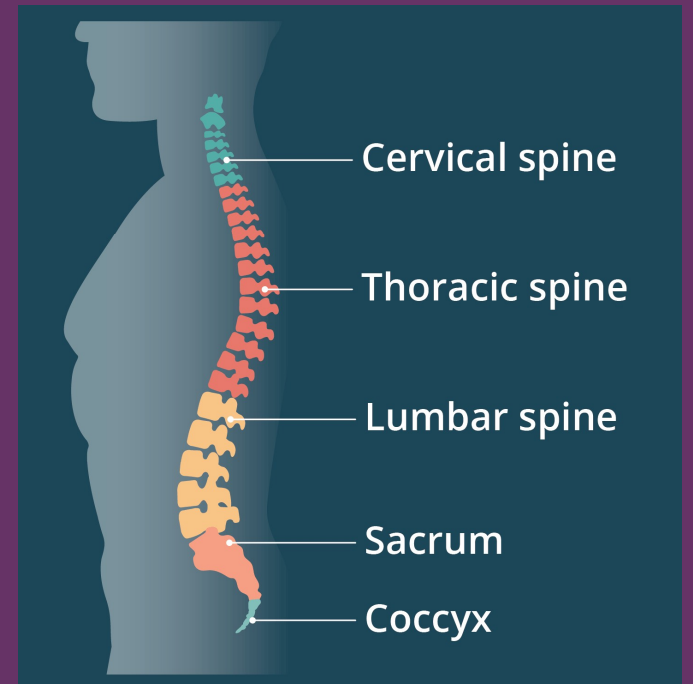
## The Goals

Within this project there are some things we have to pay attention to. These arise from the inherit properties of healthcare.

The language model must follow rules that prevent it from alarming the user. For example it should not imply that the lumbar spine is a fragile part of the body.

In addition to being non-alarming, the language model should be friendly and understanding of the user's back problems.

The responses from the language model must also be factual and complete. If it cannot provide a fully accurate or complete answer, it should either refrain from answering or ask for clarification.

## Our activities

To reach the goals of the project we have started by testing some simple systems and exploring the data.

To make the data we got more workable, we split into relevant chunks of text based on the information contained in them. We also looked at the quality of the data by looking into some standard quality indicators of text such as percentage of abbreviations.

As for the simple systems we tried, we looked at Retrieval-Augmented Generation systems, or RAG for short. In the RAG system, we store the text chunks from the data preparation we did. These are then ranked based on relevance for a given question to return the best context for the language model.
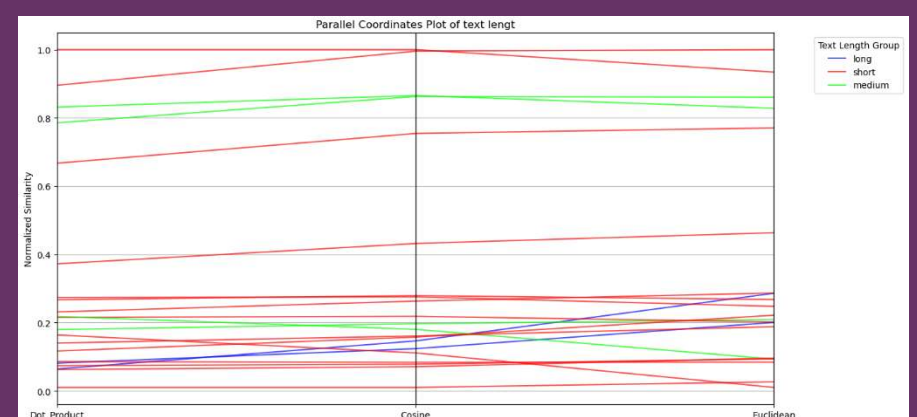


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