# Homework assignment for AI Engineer | nexos.ai

**Background**
You are an AI engineer at nexos.ai. During the retrospective meeting of a product team, you heard that our LLM Gateway, compared to market competitors, is lacking a smart routing feature. Competitors have a feature where router is making decisions based on different prompt properties, as well as pre-defined LLM attributes like cost, speed, LLM feature set and similar.

You decided to conduct research and build a few proofs of concept on how such a feature might be implemented.

**Assignment**
You decided to test out a few possible solutions to a problem:
1. Evaluate different prompt properties, based on which decisions will be made to route to different LLMs.
2. Create a small dataset and evaluate the fine-tuning approach using a method of your choice. Note: don't try to optimise solution for routing to all possible LLMs - a couple selected LLMs is enough in the scope of this assignment.

After the experiments, you decided to:
1. Write an API for the LLM Gateway team to test one of your experiments (prompt engineering or fine-tuning).
2. Prepare a document with your findings and experiments' results.
3. Write suggestions for the LLM Gateway team on how to move further with feature implementation.

Constraints of a task:
1. Write code in Python programming language.
2. All your experiments should be documented in a Notebook.
3. Experiments should be reproducible, and fine-tuned models should be available for download.
4. Bonus if you could deploy the fine-tuned model.

**Final note**
If you feel stuck, if any of the requirements are unclear, or you need any hints - reach out to [zilvinas@nexos.ai](mailto:zilvinas@nexos.ai) (PM for the assignment) and [mantas.lukauskas@nexos.ai](mailto:mantas.lukauskas@nexos.ai) (AI Advisor). Good luck!