Sum4All: Structured Chart Summarization with LLMs (Master Thesis)

Charts are essential educational visualizations, presenting ideas through simple illustrations. Large Language Models (LLMs) have demonstrated robustness in simplifying complex textual and visual data. A compelling application of LLMs lies in chart summarization [1], which is particularly useful for tasks like Question-Answering and enhancing accessibility for all. However, current visual LLMs are not yet sufficiently robust for this task and require additional tuning and processing.

In this research, we aim to explore the potential of state-of-the-art LLMs [3] for structured and controlled chart summarization, aligning with specific levels of abstraction [2]. Our objectives encompass:

1. Dataset Preparation:
    a. Curate and preprocess the dataset tailored for the chart summarization task.
2. Model Training and Experimentation:
    a. Fine-tune state-of-the-art LLMs, using diverse training techniques and modalities.
    b. Explore different model variations and integrate innovative approaches.
3. Performance Evaluation:
    a. Quantitative evaluation of the trained models.
    b. Human assessments, to ensure the expected levels of abstraction.

Throughout your research, you'll benefit from experts' guidance and support. You will have access to a computing cluster to facilitate your experiments. **Significant findings will be submitted as a research paper at a prestigious conference.**

Requirements:

1. Demonstrated interest in the topic. **Related work [1-4].**
2. Experience with deep learning models and frameworks, such as transformers and LLMs.
3. Familiarity with the Linux OS and comfort with terminal commands.

If interested, please send your application, which should include your CV and transcript of records (optional: motivation letter) to:

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References:

1. https://github.com/mitvis/vistext
2. https://vis.csail.mit.edu/pubs/vis-text-model/
3. https://github.com/Hannibal046/Awesome-LLM
4. https://arxiv.org/abs/2304.02173