Meetings Information

Informal Get-to-know

First meeting dedicated to learning more about every group member:

- Discussing interests and passions;
- What made each choose this project;
- What we can expect from working in such project;
- Defining timetable for regular meetings:
    - Decided on weekly and/or bi-weekly meetings on Friday mornings

Project Introduction

Getting to know more about the project, main issues and what the approach to solve it will look like. In this meeting, we went through the components of the projects, highlighting some aspects like libraries that are going to be used and tool models that can be interesting:

- Find Literature about Drilling Plants and degradation models;
- Look into LangGraph and understand what it is about;
- Think about other models that can be used for this project:
    - Drilling quality;
    - Energy Consumption;
    - Setup Optimization;
    - etc...

First Tasks Implemented

In this meeting the first tasks were discussed and assigned to every element of the group. The following topics were discussed:

- Where to store and document our code? **Github** (Eduardo)

- Looking for literature to use for our tools: **Google Scholar, ArXiv, WebScience (**Adrian, Lin)
- Setting up **LangGraph, LangGraph Studio** (Eduardo)
- Setting up the **Notion** page (Eduardo)
- Comparing Models for **Degradation** of Drill Tool (Adrian, Lin)

Additionally, as a team, all the members took action into joining the project in Teams where all the weekly meetings took place!

Discussion about Presentation

For this meeting the main focuses were:

- Deciding which model for degradation to use;
- Brainstorm ideas for the presentation layout and topics to present in the software lab presentation.

After consulting what the datasets from Siemens contained, the members of the group decided to use the model described in https://github.com/MiRoSi-52wab/LLMs-Drill-Wear/blob/main/literature/Drill_Wear_Force_Signals.pdf

This way, for the presentation all the guidelines would be met, as also briefly introducing the theory behind this model for the drilling tool wear.

All the members of the group were assigned the task to start and finalize the presentation until the next meeting.

Presentation Preparation Feedback

In this meeting, the members presented the slides to the coordinator looking for feedback and comments regarding the presentation. The following notes were given:

- Add information about what tools are going to be used by the RAG Agents:
  - Energy Consumption
  - Drill Tool Wear
  - Drilling Quality
  - Optimization of the Drilling Setup

    - etc..
- Develop more information about the Literature found and the model being used for the Drill Wear
- Add information regarding the datasets provided by Siemens
- Correct some typos and layout aesthetics.

After this, all thee members from the group were assigned to meet and practice the presentation, as also decide what path of development they want to pursue:

1. **LangGraph Dev**: Responsible for developing the langgraph ecosystem initially with dummy tools;
2. **Tools Dev:** Responsible for developing and training the tools using the Siemens dataset
3. **Models Supervisor:** Responsible for finding literature crucial to develop the tools.
4. **AI Prompting Engineer:** Responsible for testing the quality of the multi-system agent responses, to diverse queries.

Second Phase Milestones

In this meeting the following things were discussed between all the members of the group:

- Feedback about the first presentation of Software Lab
- Listing all necessary steps to take forward from now:
    - Eduardo → Develop and Experiment with LangGraph/LangChain libraries with dummy tools.
    - Adrian → Develop drilling wear tool and train it with datasets provided from Siemens
    - Lin → Find new literature for the Drilling quality tool.
    - Supervisor Mohamed → Provide datasets to be used by Adrian and Lin

After discussing this, another meeting was scheduler for when the datasets are delivered from Siemens.

Progress Documentation

This meeting focused on establishing a clear and consistent way of tracking project progress across development, research, and documentation activities. The following points were addressed:

- Defining what constitutes “progress” for each role in the group;
    - Agreeing on how updates should be reported during weekly meetings;
- Aligning Notion and GitHub usage for technical and managerial documentation.

Each member was asked to regularly update their respective sections to ensure transparency and continuity.

Looking into Given Datasets

This meeting was dedicated to an initial exploration of the datasets provided by Siemens. The main objectives were:

- Understanding the structure and content of the datasets;
- Identifying relevant variables for each tool (wear, energy, quality, optimization);
- Discussing potential preprocessing and data-cleaning requirements.

Based on this analysis, responsibilities were refined for tool development and model training.

Feedback on Progress + Preparation for Second Presentation

During this meeting, the group reviewed the progress achieved since the first presentation and discussed preparations for the second one. Key discussion points included:

- Evaluation of the current state of the LangGraph ecosystem and tools;
- Identifying gaps between implementation and presentation requirements;
- Defining focus areas and responsibilities for the upcoming presentation.

Action items were assigned to ensure readiness and coherence for the second presentation.

Updating Tools

This meeting focused on technical updates to the developed tools. Topics discussed included:

- Improvements and refinements to existing tool implementations;
- Integration considerations between tools and the agent framework;
- Validation of intermediate results using the Siemens datasets.

The goal was to move from prototype-level tools toward more stable and demonstrative implementations.

Recap over Second Presentation + Next Steps

After the second presentation, the group met to reflect on feedback and define next steps. The following points were covered:

- Summary of feedback received from the presentation;
- Identification of strengths and areas requiring improvement;
- Definition of short-term and medium-term development goals.

This meeting served as a transition point toward final integration and polishing.

Look over Single and Multi Agent

This meeting was dedicated to reviewing the design and behavior of both single-agent and multi-agent configurations. The discussion focused on:

- Differences in performance and reasoning between single and multi-agent setups;
- Role definition and coordination between agents;
- Potential improvements in agent interaction and task delegation.

Decisions were made regarding which configurations to prioritize for the final delivery.

Preparation for Final Presentation

The objective of this meeting was to organize and align all efforts toward the final presentation. Main points included:

- Finalizing the presentation structure and storyline;
- Assigning presentation sections to each group member;
- Ensuring consistency between code, results, and presented content.

Emphasis was placed on clarity, completeness, and technical accuracy.

Recap on Project + Code Documentation

This meeting focused on consolidating the overall project and ensuring proper documentation. Topics discussed were:

- Reviewing the final state of the project architecture;
- Ensuring code readability, structure, and comments;
- Aligning documentation with the implemented features and tools.

Remaining documentation tasks were assigned and deadlines agreed upon.

Report and Code Documentation

The final meeting was dedicated to completing the written report and final code documentation. The main objectives were:

- Final review of the project report for clarity and coherence;
- Ensuring reproducibility and completeness of the codebase;
- Final checks before submission.

This meeting marked the formal closure of the project activities.