
🧠 Assignment Summary: Multi-Agent Translation System & Vector Distance Analysis

🎯 Objective

Build a **multi-agent translation pipeline** using a **CLI-based tool** (such as Claude Code). The system will translate sentences across multiple languages through several agents and measure how the output differs from the original input using vector embeddings.

🧩 System Components

1. CLI Tool

The entire workflow should be executed through a **command-line interface**.
You may use *Claude Code* or any similar CLI automation tool.

2. Agents (Translation Modules)

You must implement **three separate agents**, each performing a different translation step:

1. **Agent 1** – Translate from **English → French**
2. **Agent 2** – Translate from **French → Hebrew**
3. **Agent 3** – Translate from **Hebrew → English**

3. Input Requirements

- The input must be **one or two English sentences**.
- Each sentence must contain **at least 15 words**.
- The sentence(s) must include **at least 25% spelling mistakes**.

The sentence will then pass through all three agents sequentially and return to English.

📏 Evaluation & Measurements

1. Vector Distance Measurement

After the full translation cycle (EN → FR → HE → EN):

- Compute **vector embeddings** for:
    - The original English sentence
    - The final English sentence (after all three agents)
- Calculate the **vector distance** between them.

This can be done in **Python** using any embeddings model.

2. Experiment on Levels of Spelling Errors

You are encouraged to run multiple tests with different levels of spelling errors:

- From **0% up to 50% spelling errors**
- For each error level calculate the vector distance.

3. Graph Visualization

Produce a **graph** showing:

- **X-axis:** Spelling error percentage (0%–50%)
- **Y-axis:** Vector distance between original and final sentences

This graph should also be created using Python.

📃 Deliverables

You must submit:

1. **The sentences you used** (including misspelled versions).
2. **Sentence lengths** (number of words).
3. **Agent definitions / skills** (how each agent was configured).
4. **The graph** showing spelling error % vs. vector distance.
5. Optionally: your Python code for embeddings and graph generation.
