

Configuration Manual

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MSc Research Project in Artificial Intelligence

1 Obtaining Necessary API Keys

1.1 Google's Gemini API Keys

Based on (1).

1. Access <https://aistudio.google.com/>;
2. Sign in into your google account and create a project;
3. On the top-left side go to API keys;
4. On the top-right side click on the “Create API Key” button;
5. Give the key a custom name and assign it to the previously created project;
6. Click on the button to copy your new API key and paste it into your .env file, as the `GOOGLE_API_KEY` variable;

1.2 PubMed's API Key

Based on (2).

1. Sign Up at NCBI: <https://account.ncbi.nlm.nih.gov/signup/>
2. When logged in, click on your profile (e-mail) icon on the top left and select the “Account Settings” menu;
3. At the bottom of the page, click on the “Create API Key” button;
4. Copy the API Key and paste it into your .env file, as the `PUBMED_API_KEY` variable;

1.3 LangSmith's API Key

Based on (3).

1. Sign Up at LangSmith: <https://eu.smith.langchain.com/>;
2. Log into your account, click on the top-left menu and select “Tracing Projects” option;

3. Click on the “Create Project” button at the top-right side;
4. Generate your API Key, copy it, and paste it on the `LANGSMITH_API_KEY` variable in your `.env` file;
5. Finally, at your `.env` file, copy the following and substitute for your API Key and Project Name:

```
LANGSMITH_TRACING="true"
LANGSMITH_ENDPOINT="https://eu.api.smith.langchain.com"
LANGSMITH_API_KEY="your_api_key"
LANGSMITH_PROJECT="your_project_name"
```

2 Configuring the Application

2.1 Installing the Python Application

1. Git clone the project available at: <https://github.com/LukasTorquato/blackwell>;
2. Run the `.toml` file to install all necessary libraries with:

```
pip install -e .
```

3. To avoid having to run the indexing procedure (since it requires a paid Gemini API Key) you should have been able to download the complete indexed database at the project submission page, if not contact me at lukasmtorquato@gmail.com for a downloadable link;
4. Extract the file into the root folder; your project should look like Figure 1;

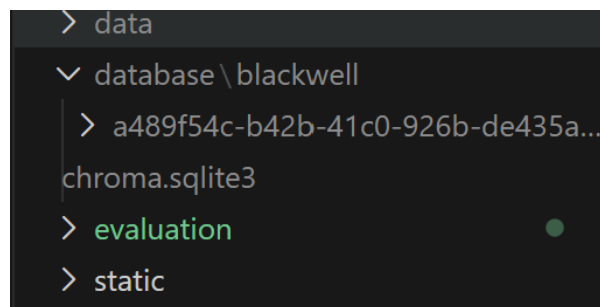


Figure 1: Database Folder Organization

5. Finally, run the application with:

```
uvicorn web_app:app --reload
```

2.2 Running Evaluation Notebooks

3 Using the Application

3.1 Anamnesis Page

1. With uvicorn running, open the application at `http://127.0.0.1:8000/anamnesis`
2. As in Figure 2, you can talk to the anamnesis agent in the chat box on the left until the agent thinks that it has completed the anamnesis;

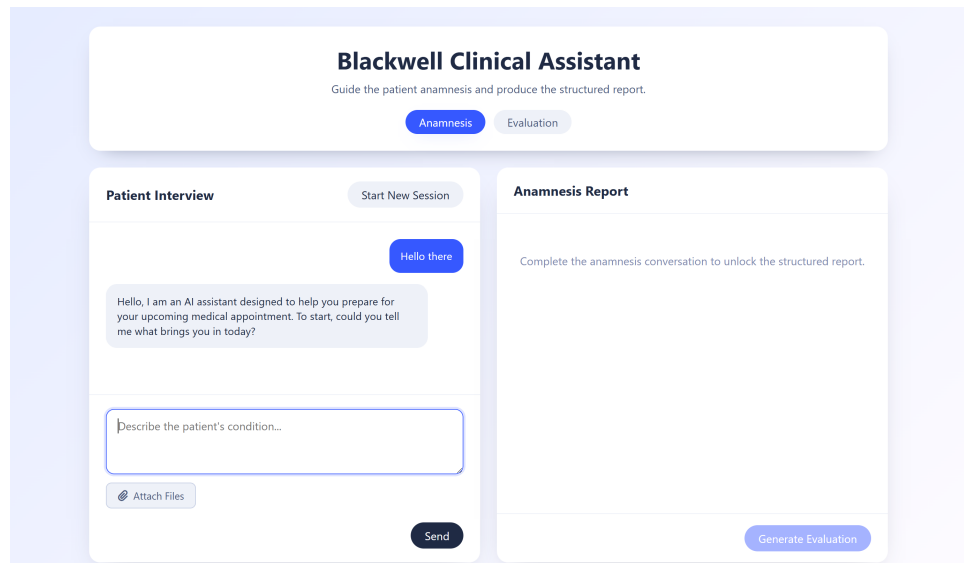


Figure 2: Anamnesis Web Page

3. You can click on the “Start New Session” button to reset everything, or after the anamnesis has been completed, you can generate an evaluation with the bottom-right button;

3.2 Evaluation Page

1. Lastly, after the evaluation has been completed, you are able to go through the well-rounded report, click on the references links, or go back to the anamnesis page;



Figure 3: Evaluator Page

4 Running Evaluations

The evaluation are done through Jupyter Notebooks, all mentioned notebooks are located in the evaluation folder also available at the Github page. The generated data that are analysed in the report is mostly generated through the `evaluation.ipynb` file. This file generates the output from the anamnesis and the evaluator agents procedurally. Before running it, the file should be moved to the project root directory. Since this is a costly procedure (thousands of Gemini API calls), the agent's outputs are already saved in `anamnesis_output.csv` and `evaluator_output.csv` files.

Finally, the `data_analysis.ipynb` file contains all the graphs and analysis mentioned in the report, - should also be moved to the root directory before running it - however, it still makes calls to the Gemini API (to utilize the embedding model for cosine similarity), some logic is made to prevent hitting API rate limits, but when utilized it increases the runtime significantly.

References

- [1] Google AI for Developers, "Using gemini api keys," <https://ai.google.dev/gemini-api/docs/api-key>, Google, November 2025, accessed: 2025-11-26.
- [2] "How do i obtain an api key through an ncbi account?" <https://support.nlm.nih.gov/kbArticle/?pn=KA-05317>, NLM Customer Support Center, National Library of Medicine, article ID: KA-05317. Accessed: 2025-12-01.
- [3] "Langsmith docs," <https://docs.langchain.com/langsmith/home>, LangChain, accessed: 2025-12-01.