CoRA Knowledge Graph

The CoRA knowledge graphs leverages the Neo4J Graph database to allow forensic anthropologists to better understand & analyze their project specimens and its related data to help in the missing persons identification process. It allows forensic scientists to find relationships between specimens using related data such as DNA, pair matching, articulations, taphonomy, anomaly, trauma, pathology, among others.

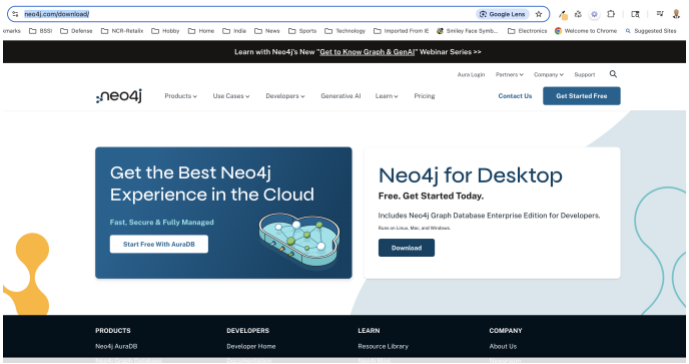
So What is a Knowledge Graph?

A knowledge graph is a design pattern for storing, organizing, and accessing interrelated data entities, including their semantic relationships. With knowledge graphs, you can better understand your data and build more intelligent applications. A knowledge graph contains three essential elements:

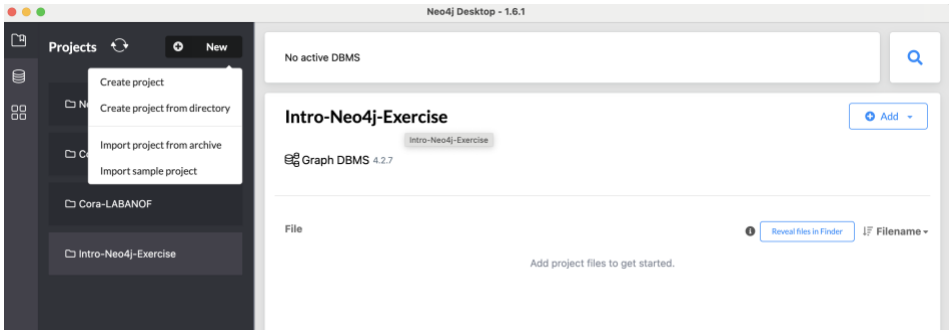
1. **Entities**, which represent the data of the organization or domain area.
2. **Relationships**, which show how the data entities interact with or relate to each other. Relationships provide context for the data.
3. An **organizing principle** that captures meta-information about core concepts relevant to the business.

Here is the process that project leads and their teams can use to get access to their projects knowledge graph.

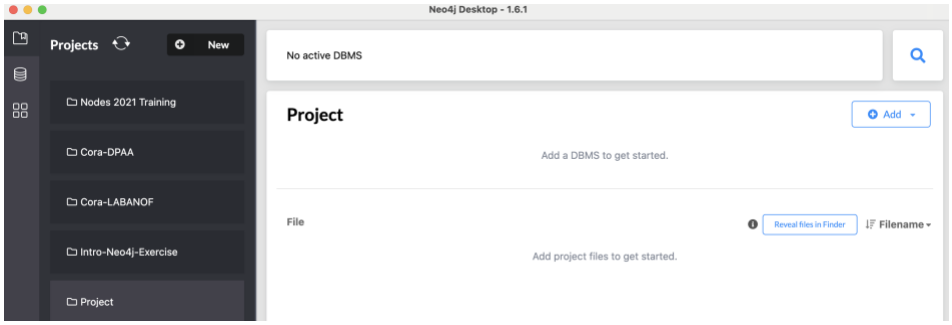
1) The project lead will request the CoRA team (Dr. Pawaskar) to generate the neo4j database dump file which will contain their project's data.
    a. The CoRA team will download the metadata such as bones, bone-groups, pathology, methods, etc.
    b. The CoRA team will download the projects specimen and its related data.
    c. The CoRA team will then upload this data into a neo4j project database using Cypher queries.
    d. The CoRA team will then extract the neo4j database dump file and send it over to the project lead.
2) The project lead should have the neo4j desktop application installed on their local machine, this can be done ahead of time by visiting the neo4j Desktop application download page at https://neo4j.com/download/



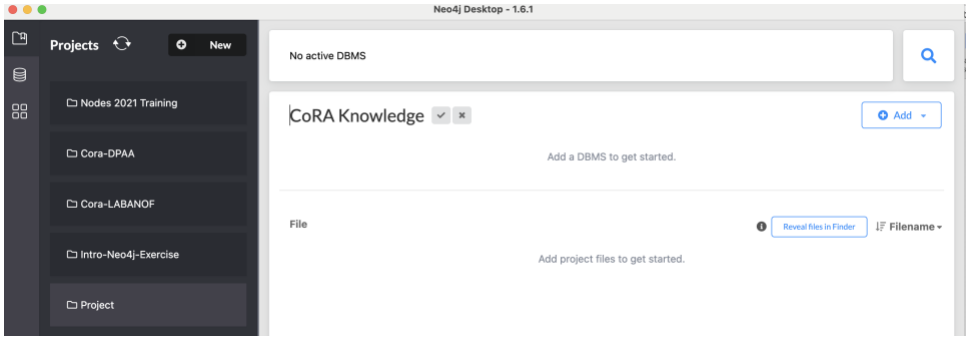
3) Open the neo4j application
   a. Select Projects → New → Create project



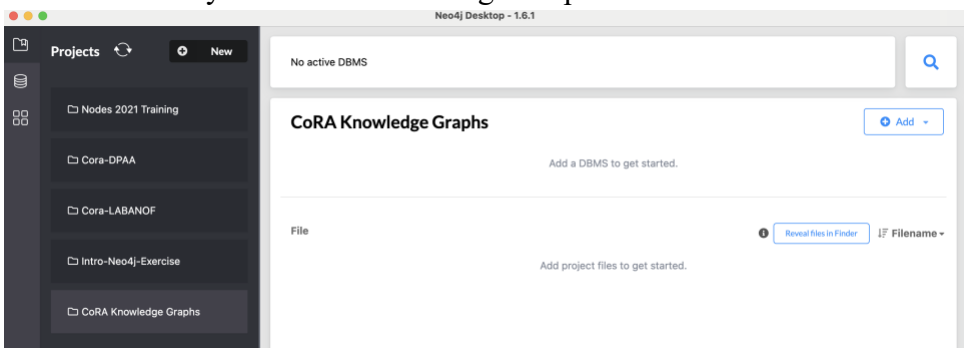
   b. This will create a new project with the name project



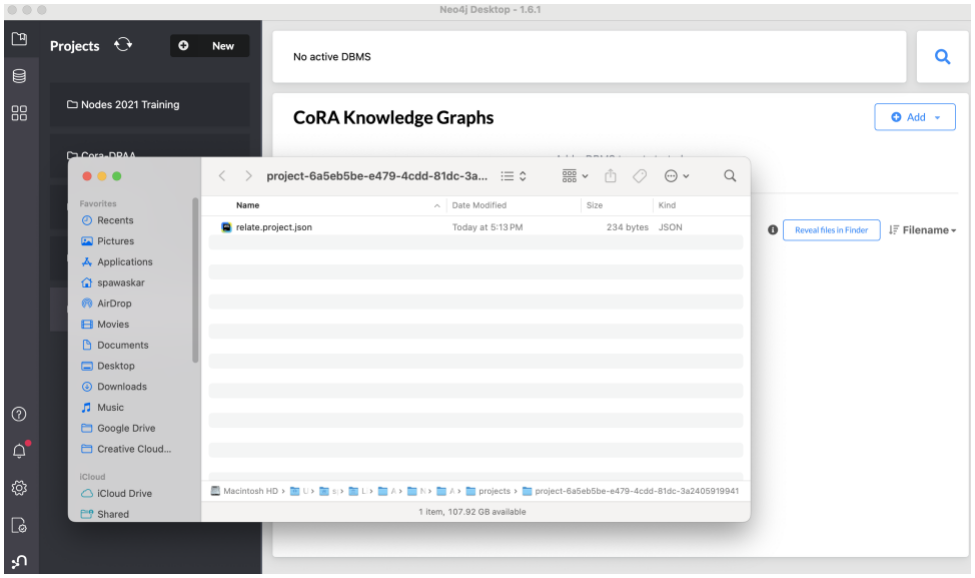
   c. Rename it as follows to “CoRA Knowledge Graphs”

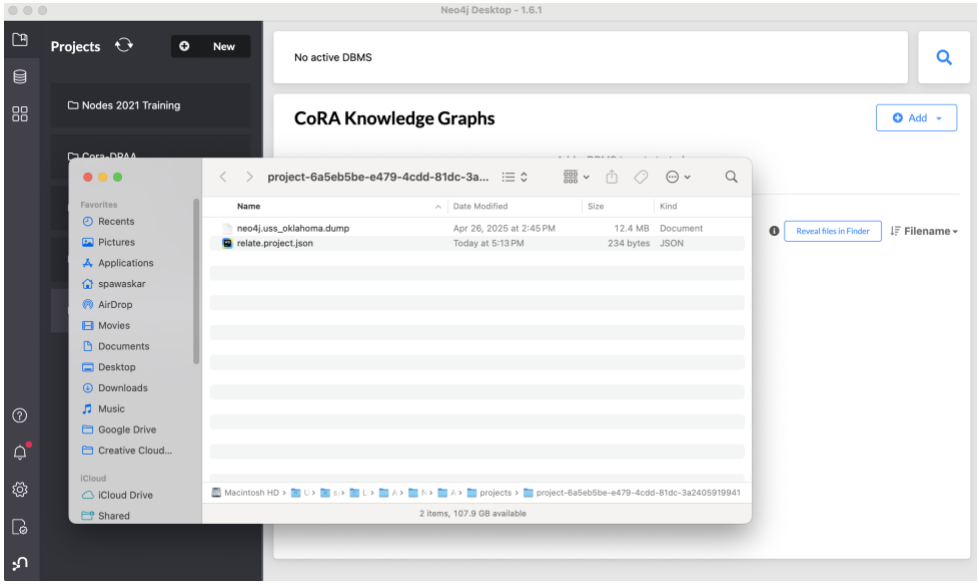


   d. You should see your CoRA Knowledge Graphs folder

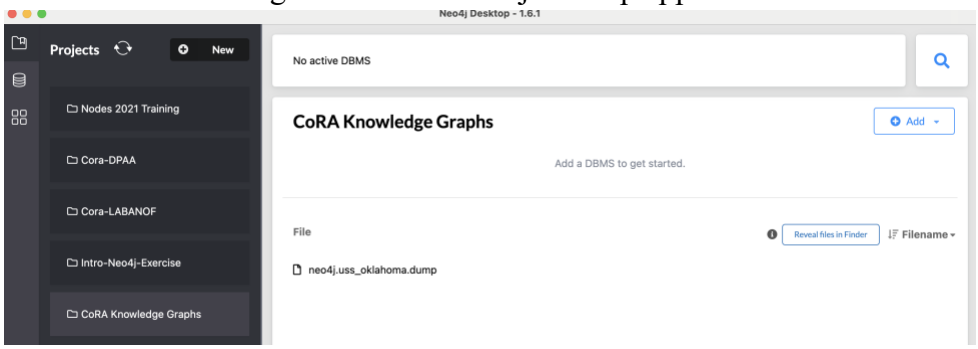


e. Now click on the “Reveal files in Folder” button which will open the files folder for the project.

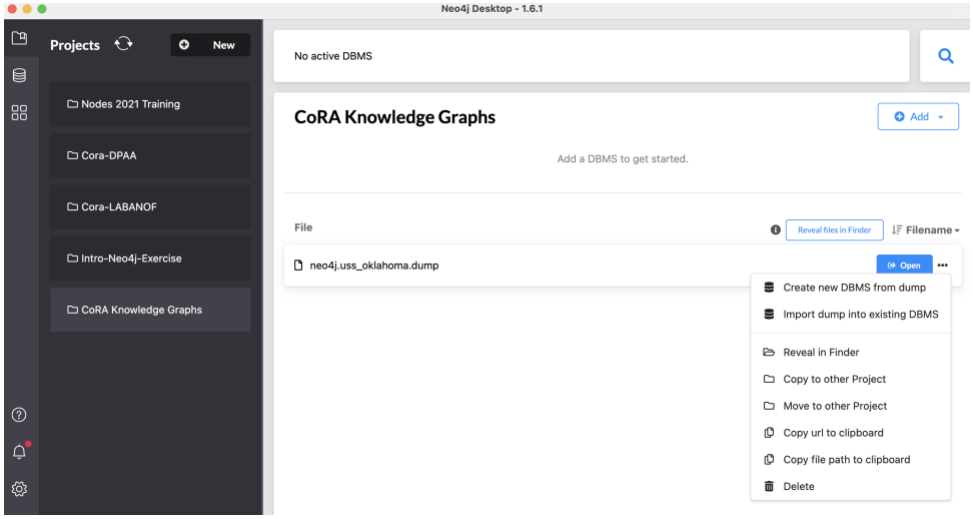




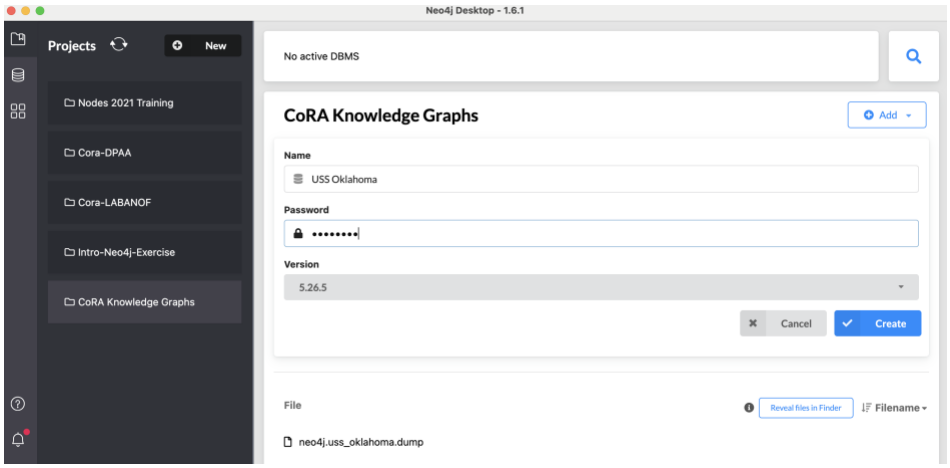
f. Close the folder and go back to the neo4j desktop application.



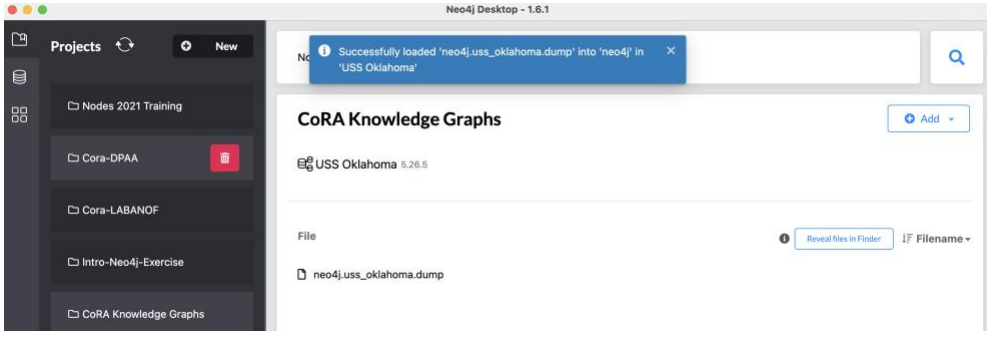
g. Now select the Create new DMBS from dump from the file options.



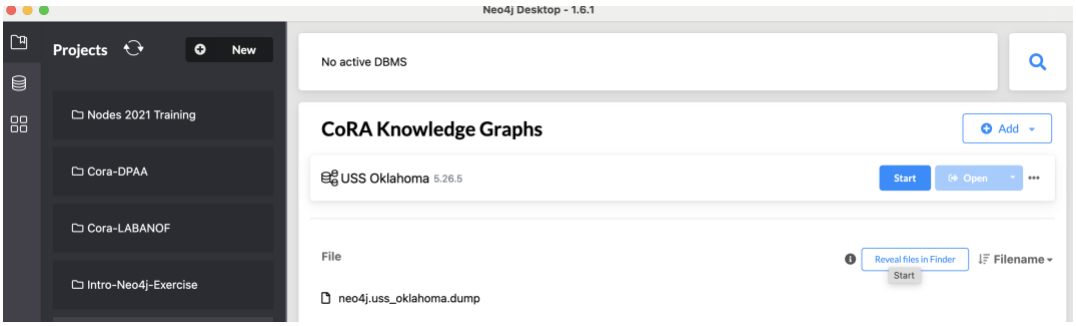
h. Now provide the DBMS name “USS Oklahoma”, provide a password and click on Create.

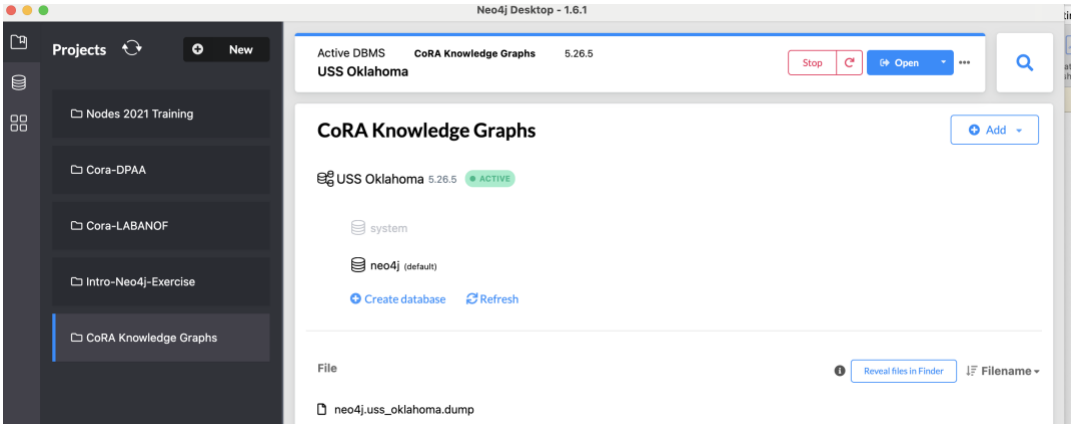


i. This will create the Neo4 database for you.



4) You should now start your Database, this will then allow you to use the project knowledge graph database in neo4j desktop and use its analytics capabilities.





5) You should now start your Database, this will then allow you to use the project knowledge graph database in neo4j desktop and use its analytics capabilities. Select the Bloom option to start exploring your project knowledge graph dataset.