Company Background:
AI Arrive is an artificial intelligence company with the vision to create AI products that accelerate research and enhance our understanding of human disease. AI Arrive partners with pharmaceutical clients to greatly accelerate R&D and drug development efforts by helping clients to make go/no-go decisions, prioritize drug targets, and uncover the mechanism of action (MoA) for drug targets. *DeeperLook* is an advanced bioinformatics suite of tools that performs bioinformatics analysis based on demographic data; designed to identify patterns that are individualized to people with genetically similar ancestry. DeeperLook can provide new value to previously published analysis by providing personalized reanalysis based on demographics.

Team Size: 4-5 Students

Location: Remote, client/team meetings will be held with Zoom.

Project Summary: AI Arrive would like to develop a beta DeeperLook solution using GEO datasets. The end goal would be to provide analysis results in a dashboard and visualization of potential relationships using a graph database. The first step would be to extract demographic information from a GEO dataset and then segment the dataset based on demographics. Next standard bioinformatics analysis pipelines would be developed and containerized in Docker. The bioinformatics analysis will include differential expression analysis, pathway analysis, and time permitting unsupervised clustering (UMAP). The next step would be to provide summary analysis results and statistics in the dashboard for each demographic group and dataset. The results of the analysis will be stored as relationships in graph databases Neo4j. There will be an aggregate graph database for each demographic and an ability to drill down to demographic dataset specific graphs. Another goal would be to develop out visuals using d3.js and/or other visualization tools to show the networks. All IP rights will be retained by AI Arrive.

Key Skills/Technologies: A background in developing ETL pipelines, NLP, network analysis, working with databases and visualizations w/ d3.js would be beneficial for tackling this project. The team can seek guidance from the client.

Student Benefits:
- Freedom to develop a creative solution to the problem.
- Future paid internship opportunities

- Build leadership skills by seeing the project through to completion.
- Opportunity to work on a project that is high impact and can make a difference

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