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CMSI 402
2/10/2020

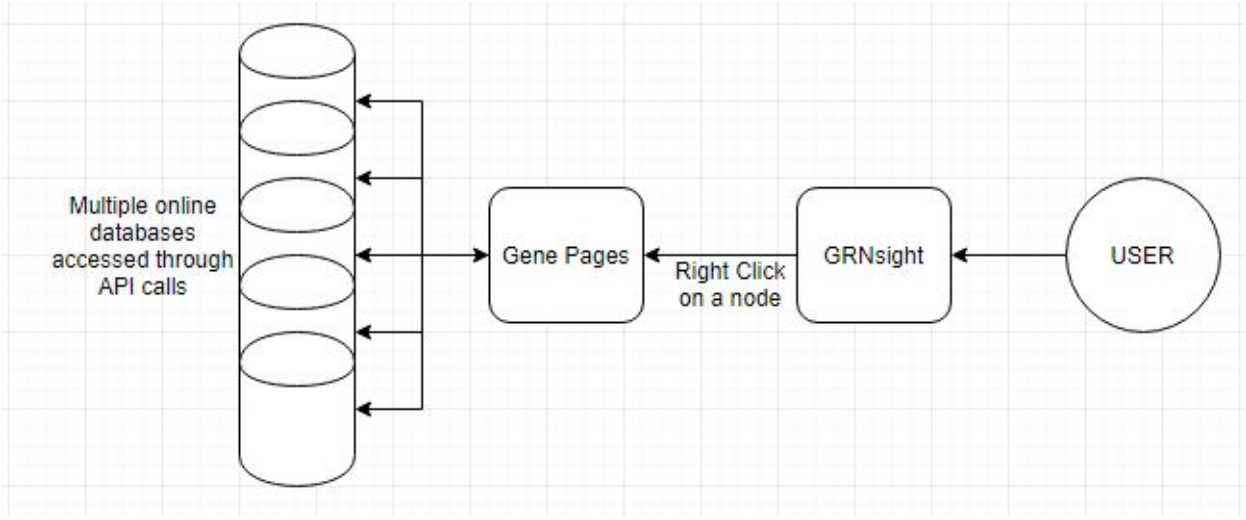
Software Requirements Specification for GRNsight Gene Page

5.1 Introduction

5.1.1 The gene page feature is an expansion of a current system available on GRNsight, a gene regulatory network visualization site. Currently the page displays information about a specific protein by querying different online databases, but is hard coded to for yeast proteins only. The goal of the project is to expand this feature to allow the user to select what species' genes are being analyzed, or to pass in the species information in the workbook. Allowing the user to query other species requires additional databases related directly to the species to be queried for information. The bulk of the work and testing will be done in JavaScript with some supplementary layout updates handled in HTML.

5.1.2 Diagrams

5.1.2.1 High Level UML Diagram



5.1.3 Outline of the Document

The remainder of the document is structured as follows:

- 5.2 contains a list of functional requirements
- 5.3 contains a list of the performance requirements
- 5.4 contains a list of the environmental requirements

5.2 Functional Requirements

This section outlines the features that the completed project can be expected to have

5.2.1 Species Determination

To allow for the proper APIs to be queried the species needs to be determined through input from the user.

5.2.1.1 The page shall hold all information needed to query the APIs which will determined by either reading the species from a workbook, or by having the user input the species name manually

5.2.1.2 The page shall have a drop down menu to allow the user to manually select the species which should be determined and selected automatically when read in from the workbook

5.2.1.3 The page shall give the user the option to read in the species from the workbook

5.2.1.4 The page shall have a collapsible section titled “Species” on the left hand side of the page which shall hold one of the species drop down menus

5.2.1.5 The page shall have “Species” section in the top menu with all of the same functionality as the other dropdown.

5.2.1.6 The page shall alert the user with a warning when species information is incorrect or missing

5.2.1.7 The menus shall display the currently selected species

5.2.2 Database API Queries

To accommodate the expansion of supported species new databases will need to be queried, and current databases will have new queries written.

5.2.2.1 The page should query only relevant databases for species data.

5.2.2.2 The page shall supply all of and only the necessary information when querying a database.

5.2.2.3 The page shall read in species data from the url

5.2.3 Gene Page Display

5.2.3.1 The page shall display a loading message while it waits for a response from all the API calls.

5.2.3.2 The page shall display the data in an organized and readable method for the user.

5.2.3.3 The page should provide citations of information to allow the user to determine which source provided the data.

5.2.3.4 The page shall display the species name after the loading message

5.3 Performance Requirements

This section describes the performance requirements for the completed gene page species expansion.

5.3.1 Species Determination Time

5.3.1.1 The gene page shall determine the species within 10 seconds of the workbook being uploaded.

5.3.2 Ability to Display Results of API Queries

5.3.2.1 The page shall display the results of the API queries when given a valid species

5.3.2.2 The page shall display the proper error message when given an incompatible species

5.3.2.3 The page shall display the proper error message when an API call fails

5.4 Environment Requirements

This section outlines the hardware and software that will be required to bring this project to completion

5.4.1 Hardware Requirements

5.4.1.1 Machine that will be able to support all the listed software requirements

5.4.2 Software Requirements

5.4.2.1 Github account with read/write access to the GRNsight repository

5.4.2.2 NodeJS

5.4.2.3 JavaScript

5.4.2.4 Code editor