# CS 340 GS Dashboard README

## About the Project/Project Title

GS Dashboard – a quick and easy way to visualize animal shelter data!

*A picture containing graphical user interface

Description automatically generated*

## Motivation

GS Dashboard is an open-source tool created for viewing information about shelter animals as a project for the rescue-animal training company Grazioso Salvare (recommend checking out their work on their website). Thanks to them they have allowed this tool to be open-source to aid anyone looking to do similar things!

## Getting Started

GS Dashboard is built in Python 3 using the Dash framework. It further uses MongoDB, a modern, non-relational database to store and access information. To serve as an API for the database, we are using our own MongoCRUD module which is built on top of the PyMongo library. Finally, this project also relies on the popular Python library pandas for data analysis.

*Why MongoDB?*

MongoDB is a flexible database with well established APIs to work with many languages. Setup is minimal and much of the backend is taken care of by default without thinking about it. It is a simple and modern solution that is also scalable to the project size.

*Why Dash?*

Dash makes it easy to create complex tables and other dataviews directly in Python. It also ports out access to Leaflet, a popular open map engine, directly to Python, that is otherwise accessible in JavaScript. Finally, it makes running a new local server instance as simple as a single line of code.

## Installation

venv – *recommended* – create a new environment to isolate projects and avoid version confusion

python -m venv PATH

pymongo - **required** – use pip to install from pyPI

pip install pymongo

or

python -m pip install pymongo

mongo\_crud – **required** – currently not available on pyPI

Check the documentation [here](CS%20340%20README%20MongoCRUD%20-%20Oloughlin.docx)

mongoDB – **required** – database engine

A free local instance of a mongoDB server can be created using MongoDB Community Server

<https://www.mongodb.com/try/download/community>

and following instructions in the associated documentation

Dash framework – **required** – use pip to install from pyPI

pip install dash

pandas – **required** – use pip to install from pyPI

pip install pandas, numpy

## Usage

GS Dashboard will need a MongoDB server instance with an active database along with configuring the MongoCRUD module to the proper server location and login information. Check out the MongoCRUD documentation for assistance with this.

Afterwards, simply run GS Dashboard to start up a local Dash server.

### Examples

1. **The default dashboard view upon loading. All database entries are displayed.**

**Graphical user interface, application

Description automatically generated**

1. **Use the filter radio buttons to sort only the animal information you like. These radio filters are customizable in the dashboard module code if you would like to change search criteria or add more.**
2. **Disaster Rescue selected.**

**Graphical user interface, application

Description automatically generated**

1. **Mountain Rescue selected.**

**Graphical user interface, application

Description automatically generated**

1. **Water Rescue selected.**

Graphical user interface, application

Description automatically generated

1. **Click anywhere on a row of data to select it. This animal’s geolocation appears on the map. If no row is selected, by default the first animal on that page appears on the map instead.**

**Graphical user interface, application

Description automatically generated**

**Development Process**

Development of this project was done primarily using the Dash framework with the documentation available at <https://dash.plotly.com/>. We also used MongoDB and our [own CRUD module](mongo_crud_doc.html) to build and access a database of animals. Development started simple with one widget at a time and making sure that each feature was working correctly before moving to the next.

Some challenges encountered with Dash:

-Laying out HTML Divs. These divide the display area and allow us to place widgets visually where we would like them. This is rather challenging and involves the use of nested divs, float parameters, and setting margins and heights properly. There may be an easier way to deal with this but I am still fairly new to front end layout.

-Callbacks. Dash has its own system of annotated callback routines that takes some time to get used to using. There is also much documentation diving to be done to find all the accessible input and output parameters available for each component.

Any comments or additional info, or collab requests, find me at:

## Contact

Craig O’Loughlin

[craig.oloughlin@snhu.edu](mailto:craig.oloughlin@snhu.edu)

<https://github.com/oloughlinc>