# Austin Animal Center Rescue Dog Software

## About the Project/Project Title

The project allows a user to work with a database containing animals from all of the surrounding Austin area’s animal shelters using a GUI. The middleware provides CRUD functionality in python that allows the front end to query data. When all of this comes together, you get a web interface that enables functionality for filtering, visualization using a table, a map of the animal’s location, and a pie chart break down.

MongoDB was used as the database because its cheaper to scale the project with MogoDB. This can be done by sharding, which allowing the project to scale horizontally. As said from [mongodb.com](https://www.mongodb.com/developer/article/top-4-reasons-to-use-mongodb/#:~:text=%20The%20Top%204%20Reasons%20Why%20You%20Should,Sometimes%20the%20changes%20are%20simple%20and...%20More%20) “Sharding is a method for distributing data across multiple servers. When your database exceeds the capacity of its current server, you can begin sharding and split it over two servers.” It is easier and faster to optimize the database with the use of indexing.

We are using the Dash framework to help us build our dashboard because of the out-of-the-box tools that come with it. Dash provides good looking, easy to implement, and easy to customize GUI tools like a dropdown menu, graphs, tables, etc.

## Challenges

Some of the challenges that were faced were overcoming the learning curve for the Dash framework. It is a well thought out framework that works well, just takes some getting used to.

Other challenges were integrating the queries and how to format them for our python CRUD module in AnimalShelterClient.py. This took a little bit of practical debugging practice and applying some logical analysis on how inputs need to enter the dictionary parameter for the readAll function found in the module. Specifically it was integrating the MongoDB operators like ‘$in’ or ‘$gte’. These must be formatted as a string so it can be passed and read by the pymongo api.

## Motivation

This project exists to help the Grazioso Salvare company to track down and find potential candidates for the different types of rescue dogs that they train. Instead of the company to hand comb the entire data set, the application allows for them to custom query dogs that meet their specification.

## Getting Started

To get this project working you will need a few things:

* Jupyter Notebook to run and edit the code in
* Python3
* The AnimalShelterClient.py for the middleware
* The AustinAnimalShelterFrontEnd.ipynb file for the web application
* A logo as a png
* Dash framework
* Plotly module
* Dash leaflet module
* MongoDB
* A terminal to work in
* MongoDB user with valid credentials

## Installation

1. Download MongoDB
2. Download python
3. Download the source files
4. Pip install the following:
   1. Dash framework
   2. Plotly module
   3. Dash Leaflet module needs to be installed
   4. Pip install pandas
   5. Pip install pymongo module
   6. Pip install numpy
   7. Pip install any other modules that may be needed for your code
5. Download Juptyer Notebook

## Usage

When you have everything installed, start by importing your data set by running this command

TO IMPORT A CSV FILE :

General format: mongoimport --port=37231 --db=AAC --collection=animals --type=csv --headerline --file=aac\_shelter\_outcomes.csv

Now start your MongoDB server with this command:

/usr/local/bin/mongod\_ctl start-noauth This is if you don’t already have a user account

/usr/local/bin/mongod\_ctl start If you do have a user account already

See these resources for creating an account

[Use SCRAM to Authenticate Clients — MongoDB Manual](https://docs.mongodb.com/manual/tutorial/configure-scram-client-authentication/#std-label-create-user-admin)

<https://docs.mongodb.com/manual/tutorial/create-users/#std-label-create-users>

From there you can start and run your web application.

When you run the code you will be able to see the main start up page with no filters applied.

Graphical user interface, text, application, email

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Graphical user interface, text, application

Description automatically generated

Now you may notice some sorting functionality built into the table. Feel free to play around with it. It may serve you some good when trying to narrow down your candidate options.

Now at the top. Notice the long dropdown menu above the table. It is set to reset by default. Go ahead and set it to something else by clicking it and selecting an option. You should see your screen update in the table, pie chart, and map when you do this as demonstrated here. Also hover your mouse over the map where the pin point is and click on the pin. You should see relevant details show up.

Map

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You can also hover over the pie graph as well to display data.

Graphical user interface, map

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Here are the other options:

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Graphical user interface, application

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## Roadmap/Features (Optional)

In the future, we need to make the map more dynamic to user input by allowing the user to select a row and having the map update depending on what row is selected.

## Resources

Dash. (n.d.). Retrieved February 18, 2022, from https://dash-leaflet.herokuapp.com/

For map functionality

*Introduction: Dash for python documentation*. Plotly. (n.d.). Retrieved February 18, 2022, from https://dash.plotly.com/introduction

*MongoDB Atlas: Cloud Document Database*. MongoDB. (n.d.). Retrieved February 18, 2022, from https://www.mongodb.com/cloud/atlas/lp/try2?utm\_source=bing&utm\_campaign=mdb\_bs\_americas\_united\_states\_search\_core\_brand\_atlas\_desktop&utm\_term=mongodb&utm\_medium=cpc\_paid\_search&utm\_ad=e&utm\_ad\_campaign\_id=415204521&adgroup=1208363748749201&msclkid=a2603ff46b141fe70b2c5dfb61a66fab

Schaefer, L. (2022, February 12). *The top 4 reasons why you should use mongodb*. MongoDB. Retrieved February 18, 2022, from https://www.mongodb.com/developer/article/top-4-reasons-to-use-mongodb/#:~:text=%20The%20Top%204%20Reasons%20Why%20You%20Should,Sometimes%20the%20changes%20are%20simple%20and...%20More%20

*Welcome to Python.org*. Python.org. (n.d.). Retrieved February 18, 2022, from https://www.python.org/

## Contact

Brandon Thibeaux

Last updated: 2/17/2022