Jose Gomez

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CS 340

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Project Two: Global Rain Dashboard

About the Project

I created this project as a way to visualize and manage animal data using CRUD (Create, Read, Update, and Delete) operations on a MongoDB database with Python. This version extends the backend functionality into an interactive dashboard using the Dash framework. The dashboard was built for Grazioso Salvare, an organization that identifies rescue animals for service. It allows users to filter, view, and explore animals based on specific rescue missions.

Motivation

The goal of this project was to expand the database programming skills gained in Project One by integrating a visual frontend with Dash. This allows users to interact with data from the AAC MongoDB collection through filters, charts, and maps — making it easier to identify animals suited for water rescue, disaster tracking, or mountain missions.

Getting Started

This program was originally designed and tested in Spyder and later adapted to a Jupyter Notebook environment for the frontend dashboard. The MongoDB database (AAC) holds animal records accessed via the animal_shelter.py class. The dashboard displays this data in a user-friendly format using Dash components.

Installation

For this project, a similar version of Python is required along with a pymongo library, Jupyter Notebook, as well as the correct authorizations (which may be provided ahead of time). Additionally, you will need dash, jupyter-dash, dash-leaflet, and plotly for building the dashboard.

Usage

Once the user successfully launches the dashboard, the interface is shown with interactive widgets which allow said user to filter by animals or by rescue type. These are selected via drop-down menus which then display the filtered results along with a dynamic data table highlighting animal location using the geolocation map. Overall, these elements were implemented to create an easy-to-navigate space for finding specific rescue animals within the AAC database.

Code for filter options:

```
# App Layout
##########################
app.layout = html.Div([
    html.Center(html.Img(src='data:image/png;base64,{}'.format(encoded_image.decode()), height='100px')),
    html.Center(html.H1('Grazioso Salvare Dashboard - Jose Gomez')),
    html.Hr(),

    html.Div([
        html.Label("Filter by Animal Type:"),
        dcc.RadioItems(
            id='filter-type',
            options=[
                {'label': 'All', 'value': 'All'},
                {'label': 'Dog', 'value': 'Dog'},
                {'label': 'Cat', 'value': 'Cat'},
                {'label': 'Bird', 'value': 'Bird'},
                {'label': 'Other', 'value': 'Other'}
            ],
            value='All',
            labelStyle={'display': 'inline-block', 'margin-right': '15px'}
        )
    ]),

    html.Br(),

    html.Div([
        html.Label("Filter by Rescue Type:"),
        dcc.Dropdown(
            id='rescue-type',
            options=[
                {'label': 'All', 'value': 'All'},
                {'label': 'Water Rescue', 'value': 'Water Rescue'},
                {'label': 'Mountain or Wilderness Rescue', 'value': 'Mountain or Wilderness Rescue'},
                {'label': 'Disaster or Individual Tracking', 'value': 'Disaster or Individual Tracking'}
            ],
            value='All',
```

Dashboard Interface:

Starting Screen:

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Filter by Animal Type:
◉ All ○ Dog ○ Cat ○ Bird ○ Other

Filter by Rescue Type:
All

rec_num	age_upon_outcome	animal_id	animal_type	breed	color	date_of_birth	datetime	monthyear	name	outcome_subtype	outcome_type	sex_upon_outcome	location_lat	location_long	age_upon_outcome_in_weeks
1	3 years	A746874	Cat	Domestic Shorthair Mix	Black/White	2014-04-10	2017-04-11 09:00:00	2017-04-11T09:00:00		SCRP	Transfer	Neutered Male	30.5066578739455	-97.3408780722188	156.767857142857
9	3 years	A720214	Dog	Labrador Retriever Mix	Red/White	2013-02-04	2016-02-11 12:41:00	2016-02-11T12:41:00	Blessing		Adoption	Spayed Female	30.3870648199411	-97.3684339731375	157.504067460317
5	2 years	A691584	Dog	Labrador Retriever Mix	Tan/White	2012-11-06	2015-05-30 13:48:00	2015-05-30T13:48:00	Luke		Return to Owner	Neutered Male	30.7104815618433	-97.562297435286	133.653571428571
10	3 months	A664290	Cat	Domestic Shorthair Mix	Tortie	2013-09-01	2013-12-08 14:58:00	2013-12-08T14:58:00	*Taylor		Adoption	Spayed Female	30.7583105481048	-97.618292198845	14.0890873015873
11	1 year	A721199	Dog	Dachshund Wirehair Mix	Tan/White	2015-02-23	2016-02-27 17:49:00	2016-02-27T17:49:00	Belle		Adoption	Spayed Female	30.7290272761146	-97.3753328216134	52.8203373015873
12	1 year	A664843	Dog	Pit Bull Mix	Brown/White	2013-06-09	2014-08-18 17:24:00	2014-08-18T17:24:00	Sherlock	Partner	Transfer	Neutered Male	30.4515549397366	-97.474104510925	62.2464285714286
13	1 year	A700408	Cat	Domestic Shorthair Mix	Brown Tabby/White	2014-04-13	2015-04-15 13:34:00	2015-04-15T13:34:00	Nyla		Return to Owner	Spayed Female	30.4101154527976	-97.562415670838	52.5093253968254
3	2 years	A716330	Dog	Chihuahua Shorthair Mix	Brown/White	2013-11-18	2015-12-28 18:43:00	2015-12-28T18:43:00	Frank		Adoption	Neutered Male	30.7595748121648	-97.5523753807133	110.111408730159
7	2 years	A673830	Dog	Pit Bull Mix	Black/White	2012-03-03	2014-03-19 15:15:00	2014-03-19T15:15:00	*Seth	Aggressive	Euthanasia	Neutered Male	30.2954256683441	-97.3136642110436	106.662202380952
15	3 years	A712638	Dog	Pit Bull Mix	Red/White	2012-09-26	2016-07-18 17:52:00	2016-07-18T17:52:00	Marcus	Partner	Transfer	Neutered Male	30.5798299207017	-97.5588487936533	198.820634920635

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Animal Types in Selection

- Dog
- Cat
- Other
- Bird
- Livestock

37.8%

Water Rescue Animals:

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Filter by Animal Type:
◉ All ○ Dog ○ Cat ○ Bird ○ Other

Filter by Rescue Type:
Water Rescue

rec_num	age_upon_outcome	animal_id	animal_type	breed	color	date_of_birth	datetime	monthyear	name	outcome_subtype	outcome_type	sex_upon_outcome	location_lat	location_long	age_upon_outcome_in_weeks
	3 years	A720214	Dog	Labrador Retriever Mix	Red/White	2013-02-04	2016-02-11 12:41:00	2016-02-11T12:41:00	Blessing		Adoption	Spayed Female	30.3870648199411	-97.3684339731375	157.504067460317
	2 years	A691584	Dog	Labrador Retriever Mix	Tan/White	2012-11-06	2015-05-30 13:48:00	2015-05-30T13:48:00	Luke		Return to Owner	Neutered Male	30.7104815618433	-97.562297435286	133.653571428571
2	5 years	A615748	Dog	Labrador Retriever Mix	Black	2009-12-11	2015-10-26 18:13:00	2015-10-26T18:13:00	Blackie	Suffering	Euthanasia	Neutered Male	30.7172069757685	-97.2952833147647	306.537003968254
6	6 months	A706953	Dog	Labrador Retriever Mix	Yellow	2014-12-06	2015-07-06 11:33:00	2015-07-06T11:33:00		Medical	Euthanasia	Intact Female	30.5480802368633	-97.2969690580957	30.3544642857143
0	2 years	A721406	Dog	Labrador Retriever Mix	Cream/White	2014-02-26	2016-05-04 00:00:00	2016-05-04T00:00:00	Lanie		Adoption	Spayed Female	30.4095171307439	-97.4146768727431	114
2	1 year	A669824	Dog	Labrador Retriever Mix	Black	2013-07-27	2014-11-15 15:19:00	2014-11-15T15:19:00	Jackson	Partner	Transfer	Neutered Male	30.6194338512674	-97.6579352219145	68.0911706349206
8	7 years	A663438	Dog	Labrador Retriever Mix	Sable	2006-09-18	2014-06-14 16:40:00	2014-06-14T16:40:00	Bonny		Adoption	Spayed Female	30.71339193104	-97.3077552120648	403.813492063492
06	5 years	A722207	Dog	Labrador Retriever Mix	Red	2011-03-12	2016-03-12 18:11:00	2016-03-12T18:11:00	Honey		Return to Owner	Spayed Female	30.4797763267616	-97.557934383539	261.108234126984
13	3 years	A669295	Dog	Labrador Retriever Mix	Brown	2010-12-18	2014-04-04 18:37:00	2014-04-04T18:37:00	Niko		Adoption	Neutered Male	30.7470766266009	-97.2653329471923	171.967956349206
21	5 months	A750619	Dog	Labrador Retriever Mix	Blue	2016-12-07	2017-06-02 18:26:00	2017-06-02T18:26:00	Carrie		Adoption	Spayed Female	30.3143476102105	-97.6878018783755	25.3954365079365

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Mountain or Wilderness Rescue Animals:

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Filter by Animal Type:
⦿ All ○ Dog ○ Cat ○ Bird ○ Other

Filter by Rescue Type:
| Mountain or Wilderness Rescue ▾ |

rec_num	age_upon_outcome	animal_id	animal_type	breed	color	date_of_birth	datetime	monthyear	name	outcome_subtype	outcome_type	sex_upon_outcome	location_lat	location_long	age_upon_outcome_in_wee
5315	2 years	A708726	Dog	Alaskan Malamute	Sable/White	2013-07-30	2015-08-02 17:24:00	2015-08-02T17:24:00	Papa		Return to Owner	Intact Male	30.4309339291938	-97.480825836737	104.817857142857
304	13 years	A358879	Dog	German Shepherd	Brown/Black	2002-08-13	2015-09-15 16:22:00	2015-09-15T16:22:00	Simba	Suffering	Euthanasia	Neutered Male	30.4499994838973	-97.6185491903329	683.097420634921
400	11 months	A681819	Dog	German Shepherd	Black	2013-07-15	2014-07-02 16:40:00	2014-07-02T16:40:00	Ashes		Return to Owner	Spayed Female	30.502516926408	-97.5173436126027	50.3849206349206
551	4 years	A662100	Dog	German Shepherd	Brown/Black	2010-03-01	2015-02-19 12:59:00	2015-02-19T12:59:00	Beaux	Partner	Transfer	Neutered Male	30.3237157558105	-97.6878634304651	259.505853174603
1103	7 years	A738749	Dog	German Shepherd	Brown/Black	2009-11-20	2016-11-25 14:09:00	2016-11-25T14:09:00	Camelia		Adoption	Spayed Female	30.6089540148948	-97.3166651023179	366.084226190476
1364	5 months	A760132	Dog	German Shepherd	Black/Brown	2017-03-13	2017-09-04 12:11:00	2017-09-04T12:11:00	Zeus		Return to Owner	Neutered Male	30.6360434662318	-97.4203536438348	25.0725198412698
1488	2 months	A680264	Dog	German Shepherd	Black/Tan	2014-03-16	2014-05-31 16:31:00	2014-05-31T16:31:00		Partner	Transfer	Intact Female	30.4761912602785	-97.3695016342316	10.9554563492063
1541	2 years	A743624	Dog	German Shepherd	Red/White	2015-02-13	2017-02-14 00:00:00	2017-02-14T00:00:00	Gavin	Partner	Transfer	Neutered Male	30.2896694492167	-97.465067283616	104.571428571429
1796	6 months	A738212	Dog	German Shepherd	Black/Brown	2016-05-11	2016-11-13 19:00:00	2016-11-13T19:00:00	Karma	Partner	Transfer	Spayed Female	30.4414797265492	-97.7029336943424	26.6845238095238
2189	2 years	A725483	Dog	German Shepherd	Black/Brown	2014-04-29	2016-05-03 17:45:00	2016-05-03T17:45:00	Tilly		Adoption	Spayed Female	30.2973409308938	-97.4209341398927	105.105654761905

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Disaster or Individual Tracking Animals:

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Filter by Animal Type:
⦿ All ○ Dog ○ Cat ○ Bird ○ Other

Filter by Rescue Type:
| Disaster or Individual Tracking ▾ |

rec_num	age_upon_outcome	animal_id	animal_type	breed	color	date_of_birth	datetime	monthyear	name	outcome_subtype	outcome_type	sex_upon_outcome	location_lat	location_long	age_upon_outcome_in_week
3767	4 years	A712291	Dog	Bloodhound	Red	2011-09-20	2015-09-22 15:43:00	2015-09-22T15:43:00	Boomer		Return to Owner	Intact Male	30.2709983761207	-97.5923916912722	209.093551587302
304	13 years	A358879	Dog	German Shepherd	Brown/Black	2002-08-13	2015-09-15 16:22:00	2015-09-15T16:22:00	Simba	Suffering	Euthanasia	Neutered Male	30.4499994838973	-97.6185491903329	683.097420634921
400	11 months	A681819	Dog	German Shepherd	Black	2013-07-15	2014-07-02 16:40:00	2014-07-02T16:40:00	Ashes		Return to Owner	Spayed Female	30.502516926408	-97.5173436126027	50.3849206349206
551	4 years	A662100	Dog	German Shepherd	Brown/Black	2010-03-01	2015-02-19 12:59:00	2015-02-19T12:59:00	Beaux	Partner	Transfer	Neutered Male	30.3237157558105	-97.6878634304651	259.505853174603
1103	7 years	A738749	Dog	German Shepherd	Brown/Black	2009-11-20	2016-11-25 14:09:00	2016-11-25T14:09:00	Camelia		Adoption	Spayed Female	30.6089540148948	-97.3166651023179	366.084226190476
1364	5 months	A760132	Dog	German Shepherd	Black/Brown	2017-03-13	2017-09-04 12:11:00	2017-09-04T12:11:00	Zeus		Return to Owner	Neutered Male	30.6360434662318	-97.4203536438348	25.0725198412698
1488	2 months	A680264	Dog	German Shepherd	Black/Tan	2014-03-16	2014-05-31 16:31:00	2014-05-31T16:31:00		Partner	Transfer	Intact Female	30.4761912602785	-97.3695016342316	10.9554563492063
1541	2 years	A743624	Dog	German Shepherd	Red/White	2015-02-13	2017-02-14 00:00:00	2017-02-14T00:00:00	Gavin	Partner	Transfer	Neutered Male	30.2896694492167	-97.465067283616	104.571428571429
1796	6 months	A738212	Dog	German Shepherd	Black/Brown	2016-05-11	2016-11-13 19:00:00	2016-11-13T19:00:00	Karma	Partner	Transfer	Spayed Female	30.4414797265492	-97.7029336943424	26.6845238095238
2189	2 years	A725483	Dog	German Shepherd	Black/Brown	2014-04-29	2016-05-03 17:45:00	2016-05-03T17:45:00	Tilly		Adoption	Spayed Female	30.2973409308938	-97.4209341398927	105.105654761905

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Reset (All Options Again)

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Filter by Animal Type:
○ All ○ Dog ○ Cat ○ Bird ○ Other

Filter by Rescue Type:
All ▼

rec_num	age_upon_outcome	animal_id	animal_type	breed	color	date_of_birth	datetime	monthyear	name	outcome_subtype	outcome_type	sex_upon_outcome	location_lat	location_long	age_upon_outcome_in_w
	3 years	A746874	Cat	Domestic Shorthair Mix	Black/White	2014-04-10	2017-04-11 09:00:00	2017-04-11T09:00:00		SCRP	Transfer	Neutered Male	30.5066578739455	-97.3488780722188	156.767057142857
	3 years	A720214	Dog	Labrador Retriever Mix	Red/White	2013-02-04	2016-02-11 12:41:00	2016-02-11T12:41:00	Blessing		Adoption	Spayed Female	30.3870648199411	-97.3684339731375	157.504067460317
	2 years	A691584	Dog	Labrador Retriever Mix	Tan/White	2012-11-06	2015-05-30 13:48:00	2015-05-30T13:48:00	Luke		Return to Owner	Neutered Male	30.7104815618433	-97.562297435286	133.653571428571
0	3 months	A664290	Cat	Domestic Shorthair Mix	Tortie	2013-09-01	2013-12-08 14:58:00	2013-12-08T14:58:00	*Taylor		Adoption	Spayed Female	30.7583105481048	-97.618292198845	14.0890873015873
1	1 year	A721199	Dog	Dachshund Wirehair Mix	Tan/White	2015-02-23	2016-02-27 17:49:00	2016-02-27T17:49:00	Belle		Adoption	Spayed Female	30.7290272761146	-97.3753328216134	52.8203373015873
2	1 year	A664843	Dog	Pit Bull Mix	Brown/White	2013-06-09	2014-08-18 17:24:00	2014-08-18T17:24:00	Sherlock	Partner	Transfer	Neutered Male	30.4515549397366	-97.474104510925	62.2464285714286
3	1 year	A700408	Cat	Domestic Shorthair Mix	Brown Tabby/White	2014-04-13	2015-04-15 13:34:00	2015-04-15T13:34:00	Nyla		Return to Owner	Spayed Female	30.4101154527976	-97.562415670838	52.5093253968254
	2 years	A716330	Dog	Chihuahua Shorthair Mix	Brown/White	2013-11-18	2015-12-28 18:43:00	2015-12-28T18:43:00	Frank		Adoption	Neutered Male	30.7595748121648	-97.5523753807133	110.111408730159
	2 years	A673830	Dog	Pit Bull Mix	Black/White	2012-03-03	2014-03-19 15:15:00	2014-03-19T15:15:00	*Seth	Aggressive	Euthanasia	Neutered Male	30.2954256583441	-97.3136642110436	106.662202380952
5	3 years	A712638	Dog	Pit Bull Mix	Red/White	2012-09-26	2016-07-18 17:52:00	2016-07-18T17:52:00	Marcus	Partner	Transfer	Neutered Male	30.5798299207017	-97.5588487936533	198.820634920635

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