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CS-340

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Grazioso Salvare Dashboard – README

Project Overview

This project is a dashboard application developed for Grazioso Salvare, an international rescue animal training company. The dashboard is designed to help the client interact with data from Austin-area animal shelters, filter it according to specific rescue types, and visualize the results through charts and a geolocation map.

The dashboard is built using Python, the Dash framework, and MongoDB as the database. The CRUD functionality for MongoDB is implemented in a separate Python module (CRUD.py) that handles Create, Read, Update, and Delete operations.

Required Functionality

The dashboard includes the following main features:

1. Interactive Filters
 - Users can filter available dogs based on rescue type:
 - a. All
 - b. Water Rescue
 - c. Mountain/Wilderness Rescue
 - d. Disaster/Individual Tracking
2. Dynamic Data Table
 - a. Displays unfiltered or filtered data based on the selected rescue type
 - b. Supports sorting, filtering, and pagination
 - c. Allows row and column selection for improved usability
3. Geolocation Map
 - a. Shows the location of the selected dog(s) on a map
 - b. Includes markers with tooltips and popups for dog details
4. Breed Distribution Chart
 - a. Displays a pie chart of dog breeds based on the filtered data
5. Branding and Unique Identifier
 - a. Grazioso Salvare logo is included in the header

- b. Dashboard title includes my unique identifier: Tashyra Adams

Tools Used

- Python – for backend logic and connecting to MongoDB
- Dash & JupyterDash – for creating the interactive dashboard interface
- MongoDB – as the database for storing and querying animal shelter data
- pandas – for data manipulation and handling DataFrames
- plotly.express – for creating charts
- dash-leaflet – for geolocation mapping
- base64 – for encoding the logo image for display

Rationale:

MongoDB is used because of its flexible document structure, which is perfect for the varied animal data. Dash provides an easy way to create interactive dashboards with callbacks, allowing dynamic responses to user input.


Steps Taken to Complete the Project

1. Database Setup and CRUD Module
 - a. Connected to MongoDB using the AnimalShelter CRUD Python module
 - b. Tested all CRUD operations to ensure correct integration
2. Dashboard Layout
 - a. Created the layout in ProjectTwoDashboard.ipynb
 - b. Included the logo and a unique identifier in the header
 - c. Added the interactive radio button filters
3. Data Table Implementation
 - a. Populated with data from MongoDB
 - b. Enabled filtering, sorting, pagination, and row selection
4. Dynamic Chart and Map Integration
 - a. Pie chart updates based on filtered data from the table
 - b. Geolocation map shows selected dogs with tooltips and popups
5. Testing and Debugging
 - a. Verified that all interactive features respond correctly to filters
 - b. Ensured DataTable and charts update dynamically without errors

Screenshots of Dashboard Functionality

1. Starting State – All Data

Displays the full dataset with all dogs, interactive filters, data table, and charts.




Grazioso Salvare Dashboard - Tashyra Adams

Select Rescue Type:
☒ All ☐ Water Rescue ☐ Wilderness Rescue ☐ Disaster/Tracking

<input type="checkbox"/> filter di	<input type="checkbox"/> rec_num	<input type="checkbox"/> age_upon_outcome	<input type="checkbox"/> animal_id	<input type="checkbox"/> animal_type	<input type="checkbox"/> breed	<input type="checkbox"/> color	<input type="checkbox"/> date_of_birth	<input type="checkbox"/> datetime	<input type="checkbox"/> monthyear	<input type="checkbox"/> name
<input checked="" type="radio"/> 1	3 years	A746874	Cat	Domestic Shorthair Mix	Black/white	2014-04-10	2017-04-11 09:00:00	2017-04-11T09:00:00		
<input type="radio"/> 2	1 year	A725717	Cat	Domestic Shorthair Mix	Silver Tabby	2015-05-02	2016-05-06 10:49:00	2016-05-06T10:49:00		
<input type="radio"/> 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
<input type="radio"/> 4	7 months	A733653	Cat	Siamese Mix	Seal Point	2016-01-25	2016-08-27 18:11:00	2016-08-27T18:11:00		Kitty
<input type="radio"/> 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
<input type="radio"/> 6	5 years	A696004	Dog	Cardigan Welsh Corgi Mix	Sable/white	2010-01-27	2015-01-28 10:39:00	2015-01-28T10:39:00		Lucy
<input type="radio"/> 7	2 years	A673830	Dog	Pit Bull Mix	Black/white	2012-03-03	2014-03-19 15:15:00	2014-03-19T15:15:00		h
<input type="radio"/> 8	1 year	A736551	Dog	Labrador Retriever/Australian Cattle Dog	Black	2015-10-12	2016-11-27 18:00:00	2016-11-27T18:00:00		a
<input type="radio"/> 9	3 years	A720214	Dog	Labrador Retriever Mix	Red/white	2013-02-04	2016-02-11 12:41:00	2016-02-11T12:41:00		Blessin
<input type="radio"/> 10	3 months	A664700	Cat	Domestic Shorthair Mix	Tan/white	2013-00-01	2013-12-00 14:00:00	2013-12-00T14:00:00		ST...

Water Rescue Filter Applied

Shows dogs suitable for water rescue. DataTable, pie chart, and map update accordingly.



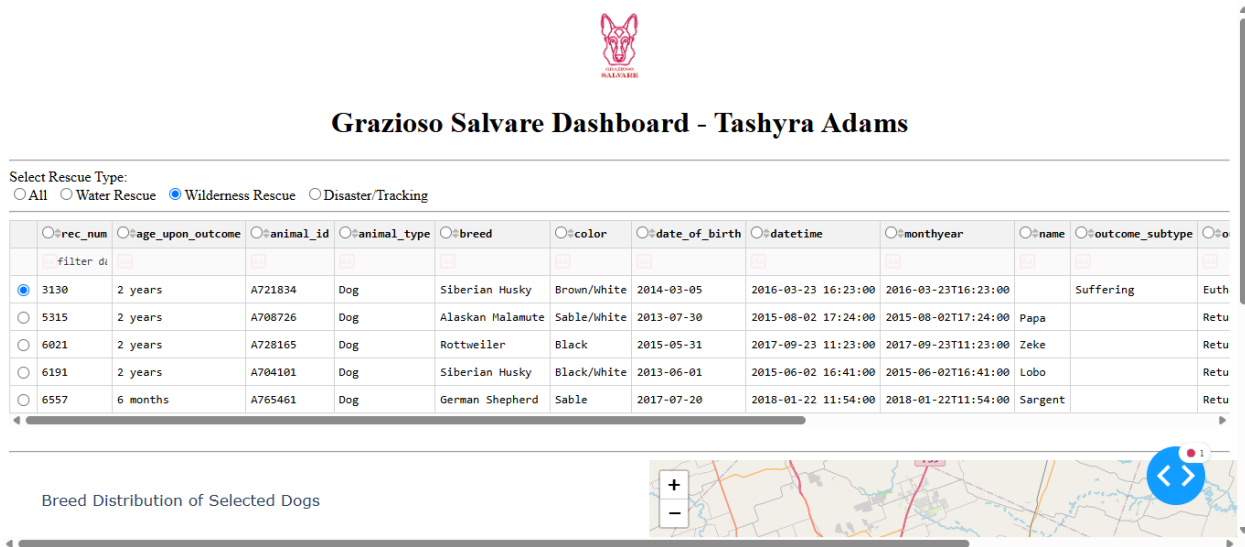
Grazioso Salvare Dashboard - Tashyra Adams

Select Rescue Type:
☐ All ☒ Water Rescue ☐ Wilderness Rescue ☐ Disaster/Tracking

<input type="checkbox"/> filter di	<input type="checkbox"/> rec_num	<input type="checkbox"/> age_upon_outcome	<input type="checkbox"/> animal_id	<input type="checkbox"/> animal_type	<input type="checkbox"/> breed	<input type="checkbox"/> color	<input type="checkbox"/> date_of_birth	<input type="checkbox"/> datetime	<input type="checkbox"/> monthyear	<input type="checkbox"/> name	<input type="checkbox"/> outcome_subty
<input checked="" type="radio"/> 36	6 months	A706953	Dog	Labrador Retriever Mix	Yellow	2014-12-06	2015-07-06 11:33:00	2015-07-06T11:33:00			Medical
<input type="radio"/> 732	2 years	A749782	Dog	Labrador Retriever Mix	Tan/white	2015-05-19	2017-07-25 14:59:00	2017-07-25T14:59:00		*Catalina	
<input type="radio"/> 1121	1 year	A757158	Dog	Labrador Retriever Mix	White/Black	2016-08-30	2017-08-31 14:12:00	2017-08-31T14:12:00		Pirata	
<input type="radio"/> 1628	9 months	A740471	Dog	Labrador Retriever Mix	Tan/white	2016-03-17	2016-12-23 17:13:00	2016-12-23T17:13:00		Mika	
<input type="radio"/> 1757	7 months	A742767	Dog	Labrador Retriever Mix	Black	2016-06-27	2017-02-14 15:20:00	2017-02-14T15:20:00		Marley	
<input type="radio"/> 1988	1 year	A762781	Dog	Labrador Retriever Mix	Black/white	2016-11-27	2017-12-03 13:09:00	2017-12-03T13:09:00			Partner
<input type="radio"/> 2041	2 years	A702745	Dog	Labrador Retriever Mix	Black	2013-05-22	2015-05-22 11:45:00	2015-05-22T11:45:00		Abigail	
<input type="radio"/> 2225	2 years	A757341	Dog	Labrador Retriever Mix	Black/white	2015-09-01	2017-10-03 12:27:00	2017-10-03T12:27:00		19	Par
<input type="radio"/> 3319	9 months	A687748	Dog	Labrador Retriever Mix	Yellow	2013-12-09	2014-09-09 17:01:00	2014-09-09T17:01:00			Suffering
<input type="radio"/> 4333	1 year	A736551	Dog	Labrador Retriever Mix	Black	2015-00-01	2016-00-01 14:00:00	2016-00-01T14:00:00			

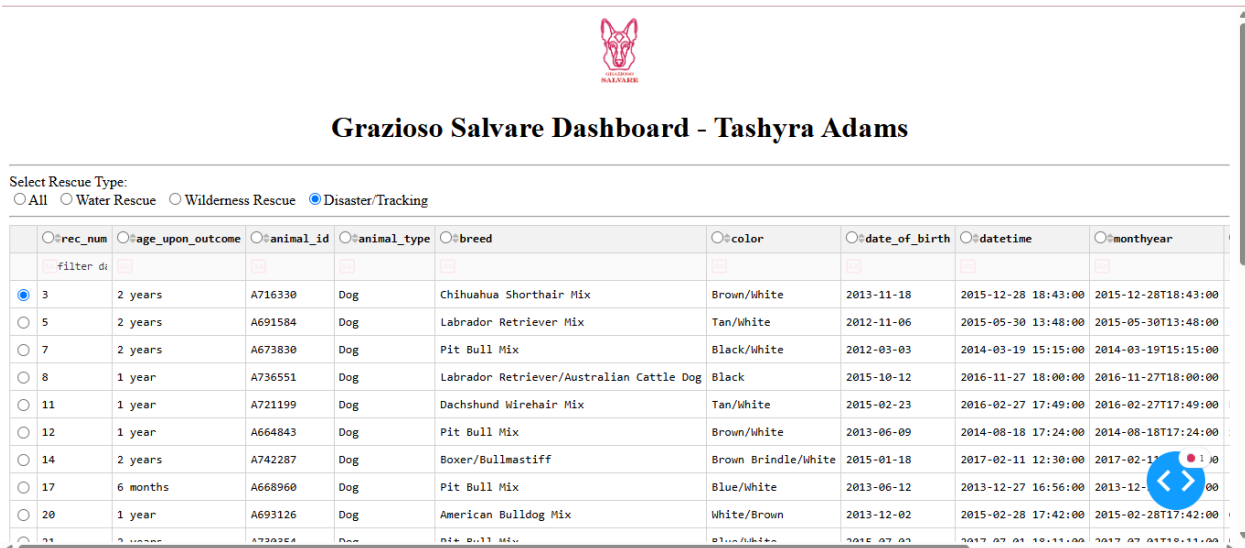
Mountain/Wilderness Rescue Filter Applied

Displays dogs trained for mountain or wilderness rescue with updated table and charts.



Disaster/Individual Tracking Filter Applied

Shows dogs suitable for disaster or individual tracking rescue missions.



Reset / All Data Again

Demonstrates that selecting “All” restores the full dataset in the table, charts, and map.



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Select Rescue Type:

☒ All ☐ Water Rescue ☐ Wilderness Rescue ☐ Disaster/Tracking

	<input type="radio"/> rec_num	<input type="radio"/> age_upon_outcome	<input type="radio"/> animal_id	<input type="radio"/> animal_type	<input type="radio"/> breed	<input type="radio"/> color	<input type="radio"/> date_of_birth	<input type="radio"/> datetime	<input type="radio"/> monthyear	<input type="radio"/> name
	<input type="text" value="filter by"/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
<input checked="" type="radio"/>	1	3 years	A746874	Cat	Domestic Shorthair Mix	Black/white	2014-04-10	2017-04-11 09:00:00	2017-04-11T09:00:00	
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<input type="radio"/>	9	3 years	A720214	Dog	Labrador Retriever Mix	Red/white	2013-02-04	2016-02-11 12:41:00	2016-02-11T12:41:00	Blessin
<input type="radio"/>	10	3 months	A664000	Cat	Domestic Shorthair Mix	Tan/white	2013-00-01	2013-12-00 14:50:00	2013-12-00T14:50:00	BT...

Challenges Encountered

- Handling MongoDB ObjectIDs: Removed _id column from DataFrames to prevent DataTable crashes
- Dynamic Filtering: Ensuring filters correctly queried MongoDB and updated all dashboard components
- Map Coordinates: Some records had missing or incorrect coordinates; implemented default Austin coordinates for safety
- Dashboard Layout: Adjusted flex layout to display the map and chart side by side for better usability