Travel Planner for Bird Watchers

Project Overview

The Problem Area

- Many people get excited when seeing birds (and other wildlife) on their trips, but it is hard to plan a trip around the wildlife you want to see

- By using open-source data, can we
  - **make forecasts about locations and time intervals which have high probabilities of encountering someone's favorite birds?**
  - **Predict what kind of bird they are most likely to see based on their travel itinerary?**
  - **Propose a travel itinerary which optimizes the number of birds they may be able to see?**
  - **Identify any patterns about what kind of birds are most likely to be present at a given time and location?**

The Vision

- Create a tool that lets interested people enter in their constraints (location, time etc.) and outputs recommendations on what birds to look for when and where
  - Start by restricting the location to certain states/provinces and then extend the analysis to others
- Use Machine Learning Concepts such as time series models and clustering to come up with the analysis and then also use further optimization models based on user input
- Enable people to interact with the tool/app using natural language by incorporating LLM

The Impact

- Birding is a popular and fast-growing recreational activity in North America.
- The tourism industry would benefit from leveraging the birding tool to direct bird enthusiasts to good locations.
- Increased awareness of different bird species and a fun tool for any wildlife-enthusiasts

Project Details

The Data

- The Data is coming from Project Feeder Watch, a survey of birds that visit North America and anybody can contribute to
  - https://feederwatch.org/about/project-overview/
- The **main table**, containing the information about bird sighting between 2020 and 2023 has **8,394,814 rows and 24 columns** in its raw form
  - There are 2 additional supplementary tables with additional information
  - Records can potentially go back to 1988
- The survey only collects data between November and April each year and (in 2020-2023) there are no clear time trends for the overall number of observations
- In the US, the state of New York has submitted the most observations, while in Canada the province Ontario has by far the most records
- The bird most often observed in Canada is the Black-capped Chickadee

Next steps

- Add some of the “older” data from previous years to make finding trends easier
- Identify trends, for example by using the Date and Year columns and the detailed location data
- Restrict to a US state or a Canadian province where trends are visible and to make sure data is consistent
- Begin using time series analysis to forecast bird presence in a certain location

Thank You