Fire Watch – Wildfire & Air Quality Analysis

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Introduction

For our project, we looked into US wildfires and air quality databases to visualize major US hotspots and to forecast air quality. Our motivation is to provide information to those affected by wildfires in an easy to use and meaningful way.

Our Approaches

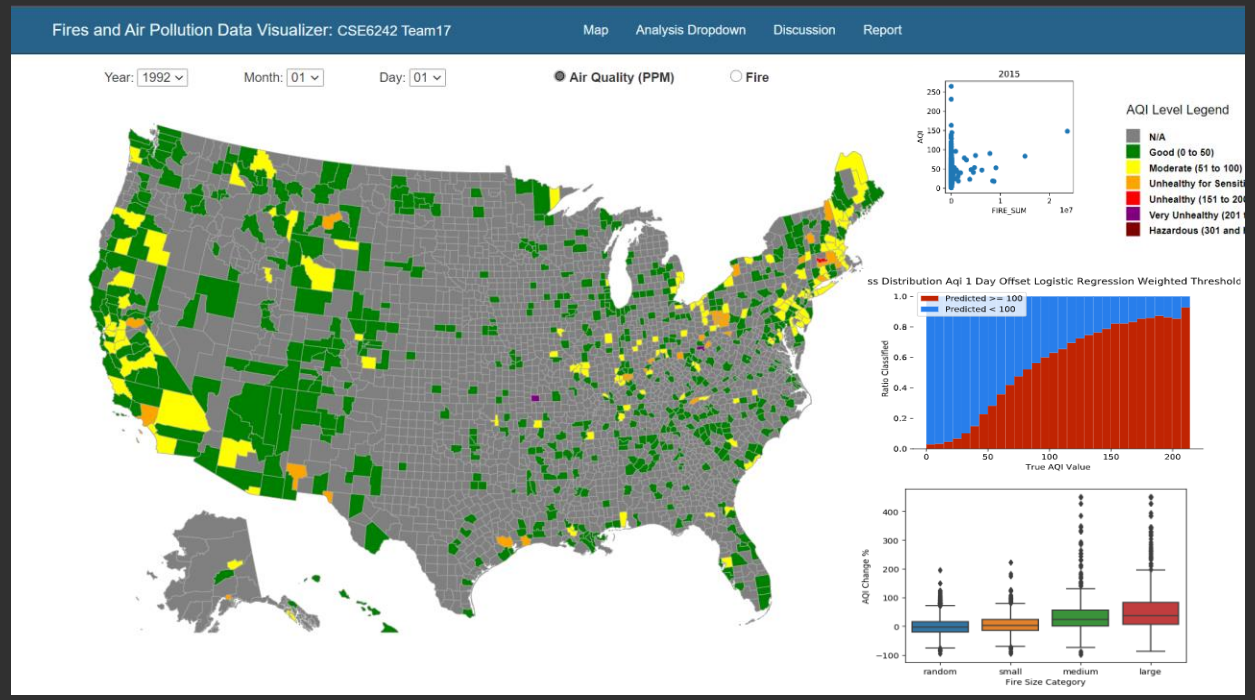
Visualization: Overlayed the data onto a map of the US and displayed past ongoing fire sizes and air quality levels. Dropdowns for time range, a toggle for fire data and air quality data and tabs for analysis result are also presented.

Forecast: Predict hazardous air quality for the next week based on air quality and wildfire data

Correlation Analysis: Visualize AQI vs Wildfires in several aspects to determine if there is a correlation

Data

AQI: United States Environmental Protection Agency
Wildfire: National Wildfire Coordinating Group



Experiments

7-Day Hazardous AQI Forecast: Regression (Logistic Regression)
AQI & Wildfire Correlations: (Scatterplots, Clustering)

Result

1. Large wildfire does show correlations in AQI change
2. Wildfire may not be the main factor predicting AQI
3. However, valid groupings of fires can be obtained with better features.

1. Each team creates a single poster for the whole team.

2. Each team member separately prepares and creates a **3-minute** video presentation (i.e., one presentation per learner).

2.1. Thus, every team member should know his/her project very well. Each team member should plan his/her presentation separately, and team members should not share presentation scripts.

2.2. Your video should show your poster with voice narration (e.g., as pdf on your computer screen via screen capture, say using MonoSnap, native screen recording software on your OS). It is up to you whether to show your face. You should be able to create this recording quickly with little effort – no need to do any special video or audio editing. You may zoom into and out of the poster as you present, so the viewe can more easily see the poster content.

2.3. Demo: optional but encouraged. Demo time counts towards presentation time.

3. Upload your video as an **unlisted YouTube video** (NOT "private" or "public"). Unlisted videos can be viewed by anyone (in this case, peer-graders who grade your presentation) with the link to your unlisted video.

3.1. Submit the **URL (web link)** of your own unlisted YouTube video via Canvas. Your graders will use this URL to view your video. To double-check that your URL works, visit that URL using a separate web browser that has been fully logged out o Google services (e.g., all cache cleared, use "Incognito" mode in Chrome, etc.)

3.2. Set the title of your YouTube video to **teamXXXposter-YY**, where XXX is the team number (e.g., 001 for team 1), and YY is the student's last name (e.g., smith). The video title will help your graders more easily recognize who they are grading, streamlining everyone's grading effort.

10%	**Motivation/Introduction**: 5% What is the problem (no jargon)? 5% Why is it important and why should we care?
20%	**Your approaches** (algorithm and interactive visualization): 5% What are they? 5% How do they work? 5% Why do you think they can effectively solve your problem (i.e., what is the intuition behind your approaches)? 5% What is new in your approaches?
10%	**Data**: 5% How did you get it? (Download? Scrape?) 5% What are its characteristics (e.g., size on disk, # of records, temporal or not, etc.)
25%	**Experiments and results**: 5% How did you evaluate your approaches? 10% What are the results? 10% How do you methods compare to other methods?
10%	**Presentation delivery**: 5% Finished on time? 5% Spoke clearly and at a good pace?
25%	**Poster Design**: 5% Layout/organization (Clear headings? Easy to follow?) 5% Use of text (Succinct or verbose?) 5% Use of graphics (Are they relevant? Do they help you better understand the project's approaches and ideas?) 5% Legibility (Is the text and figures too small?) 5% Grammar and spelling

Poster Design

Design your team's poster ***well before*** the submission deadline, to avoid last-minute rush.

The poster must be in portrait orientation, **30 inches wide and 40 inches tall**. We suggest using **18pt** font size and larger. (In Fall 2020 semester, landscape orientation is also acceptable.)

A deck of PowerPoint slides is **not acceptable** as a poster. See the illustration below for what is allowed and what is not.