Samsung Innovation Campus

Hotheads

Hale Afra Iris
Ozge Ozkaya
Gozde Gozutok
Toyan Unal

Wildfire Forecasting

for
Wildfire Preparedness

Outline

- Background
- Objectives
- SDG Relation
- Dataset
- Methodology
- Outputs
- Usability
- Next Steps

Background

- Wildfires effect lives in various aspects
- Wildfires' can be detected at early-stages to get prepared
- Early-stage prediction provides prevention from massive loss

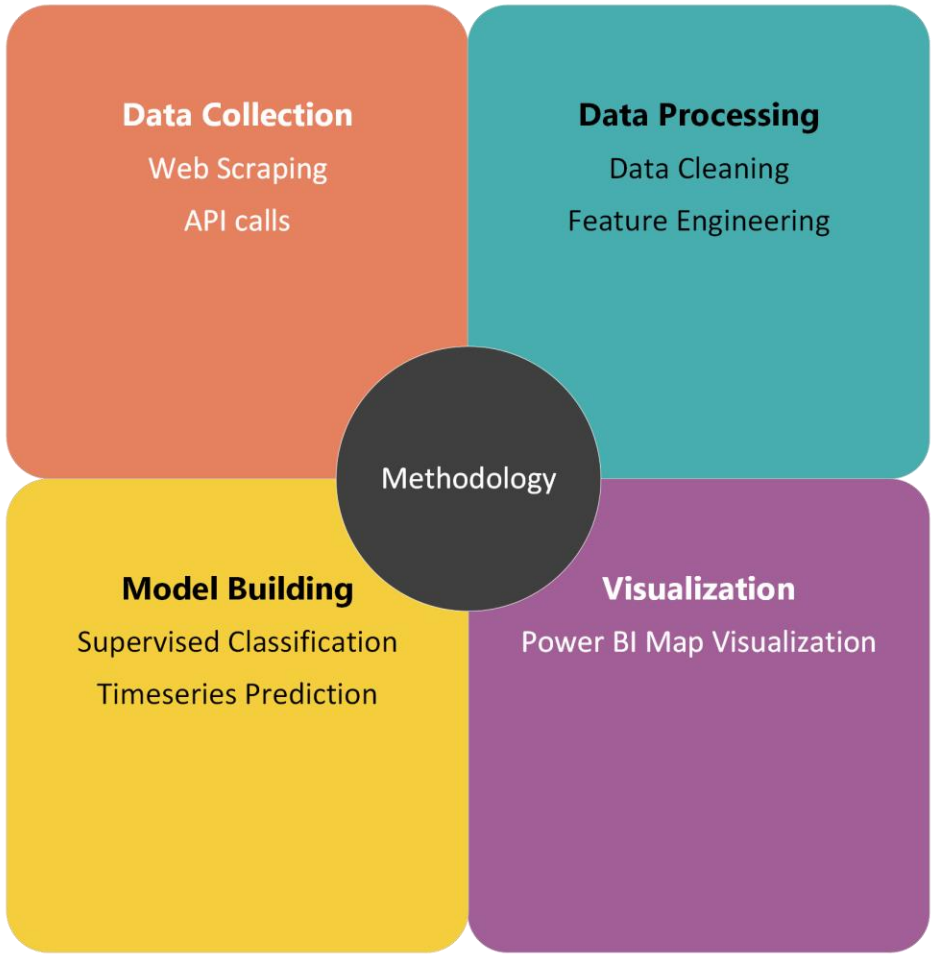
Objectives

- Building a machine learning model that predicts the probability of wildfires for given areas
- Supporting and warning disaster risk reduction/management teams at early-stages

SDG Relation

Dataset

- +150k weather and wildfire data based on Turkey
  - Wildfire data source: NASA
  - Weather data source: National Centers for Environmental Information
- Time interval: 2010 – 2015
- Focusing on the temperature, precipitation, wind speed and so on

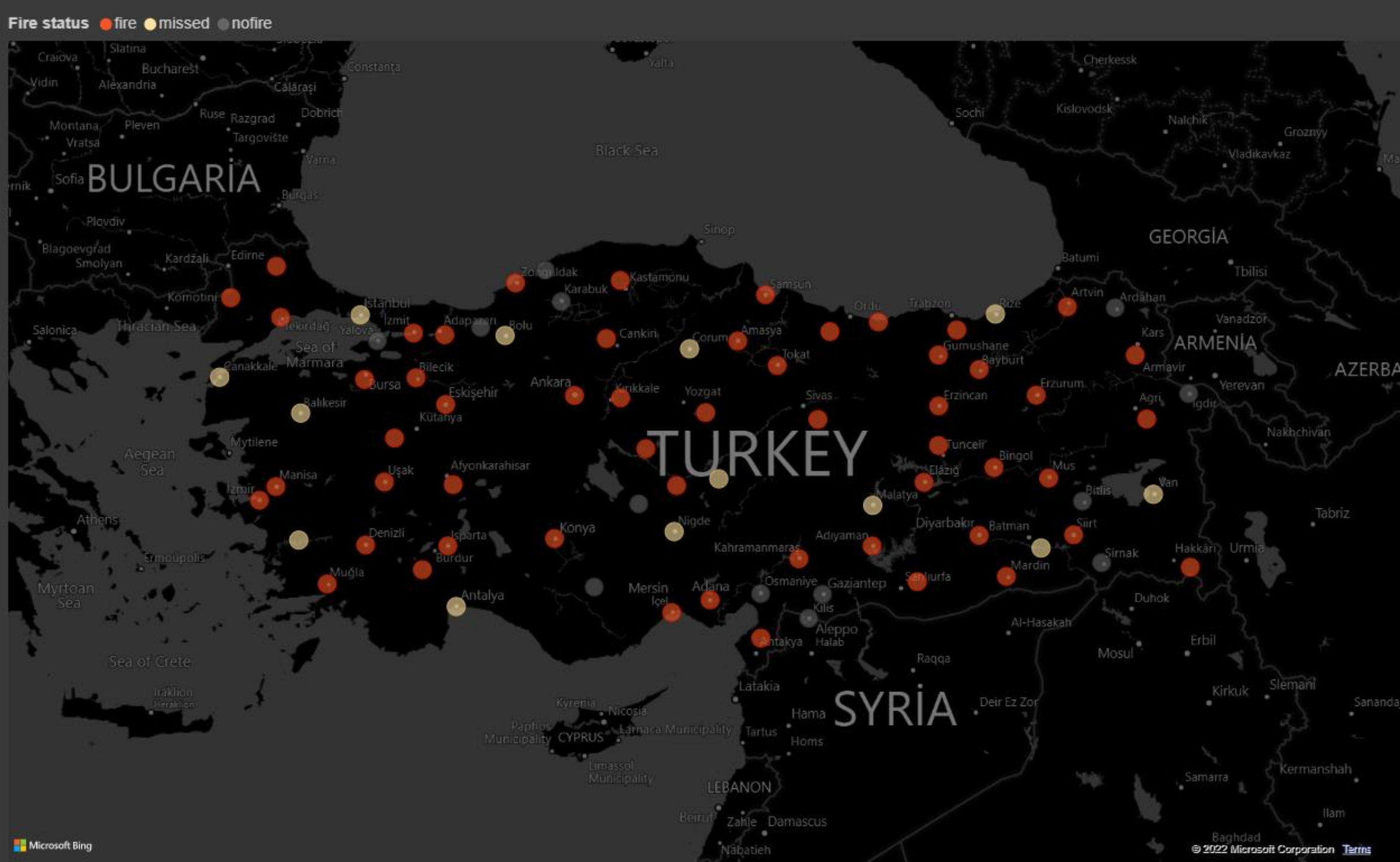

Data Collection
Web Scraping
API calls
Data Processing
Data Cleaning
Feature Engineering
Methodology
Model Building
Supervised Classification
Timeseries Prediction
Visualization
Power BI Map Visualization

Outputs

- Comprehensive dataset on Turkey Weather and Wildfire for studies
- 80% accuracy to classify fire occurrence based on:
  - Daily Temperature (min, max, average)
  - Daily Precipitation
  - Daily Average Wind Speed
  - Daily Visibility in Miles
  - Daily Dew Point
  - Daily Maximum Sustained Wind Speed
  - Quarter of the year
- Power BI dashboard(visualization of 2015)

2015

Q3



Accuracy

80%

Usability

- Adaptable for any area with required information
- Easy to implement to any kind of software environment
- Can focus on Turkey only
- Open source and open for improvement

Next Steps

- Strengthening the model with environmental data aspects such as population, usage intensity of the forests etc.
- Predict the brightness risk
- Building visualization systems for specific areas
- Building applications to warn authorities as well as the citizens about the wildfire risk

Thank you!