SMART DRAGON CHASING FIRE (S.D.C.F)

SMART DRAGON

MEMBERS :YANWEI , JASON , KELLY , JERRY

目錄

方法

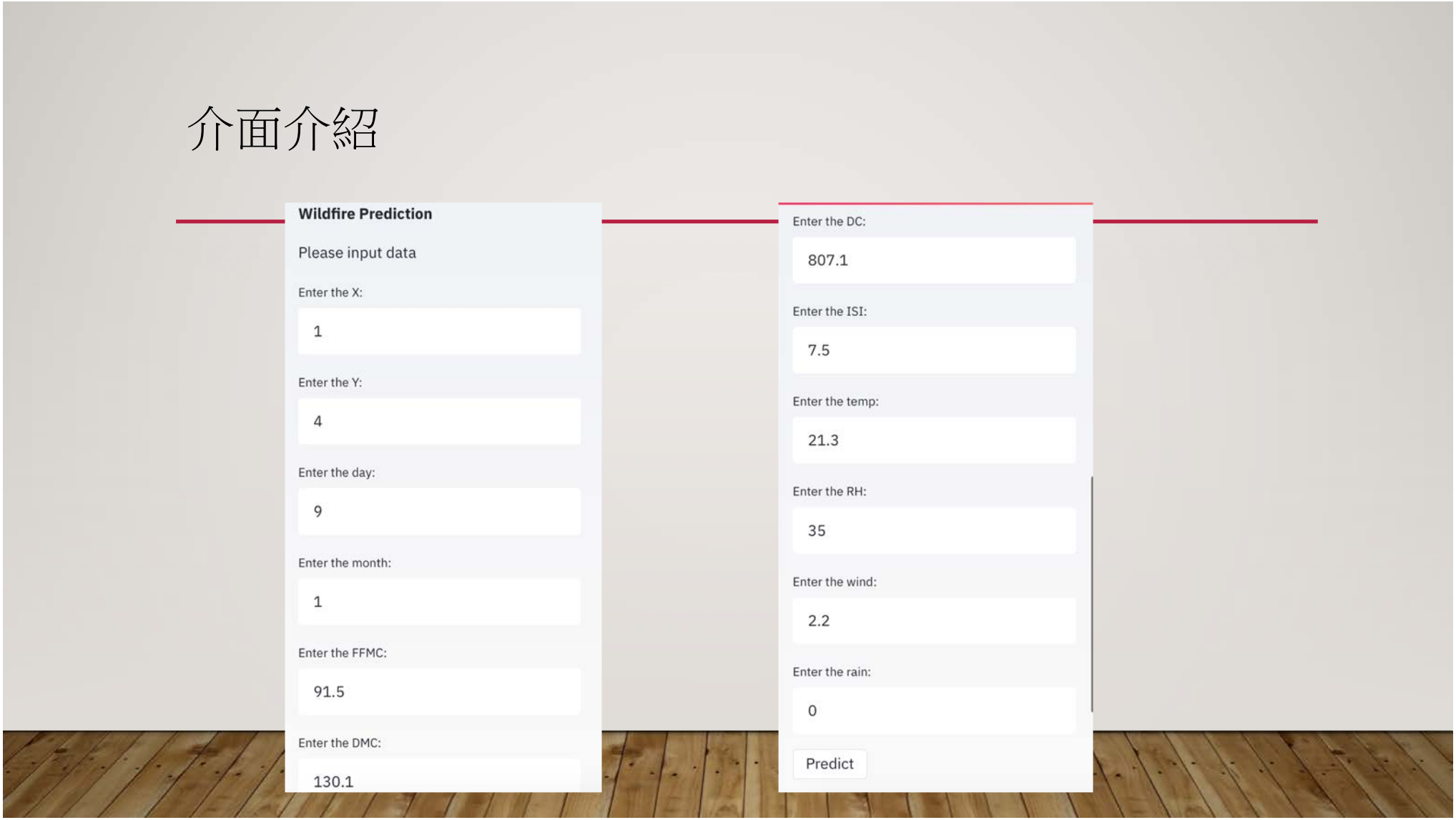
採取特徴

- X - x-axis spatial coordinate within the Montesinho park map: 1 to 9
- Y - y-axis spatial coordinate within the Montesinho park map: 2 to 9
- month - month of the year: 'jan' to 'dec'
- day - day of the week: 'mon' to 'sun'
- FFMC - FFMC index from the FWI system: 18.7 to 96.20
- DMC - DMC index from the FWI system: 1.1 to 291.3
- DC - DC index from the FWI system: 7.9 to 860.6
- ISI - ISI index from the FWI system: 0.0 to 56.10
- temp - temperature in Celsius degrees: 2.2 to 33.30
- RH - relative humidity in %: 15.0 to 100
- wind - wind speed in km/h: 0.40 to 9.40
- rain - outside rain in mm/m2 : 0.0 to 6.4
- area - the burned area of the forest (in ha): 0.00 to 1090.84 (this output variable is very skewed towards 0.0, thus it may make sense to model with the logarithm transform).

方法

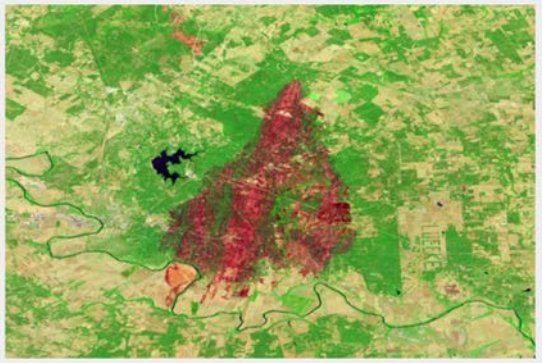
- 將原先預估火災面積的方法改為分類的方法，當area大於0時即發生火災
- 選定Support Vector Machine作為最終的分類模型演算法
- 最後架設了GUI網頁介面，使得使用者可直接透過上述特徵變化來進行火災的判斷

介面介紹

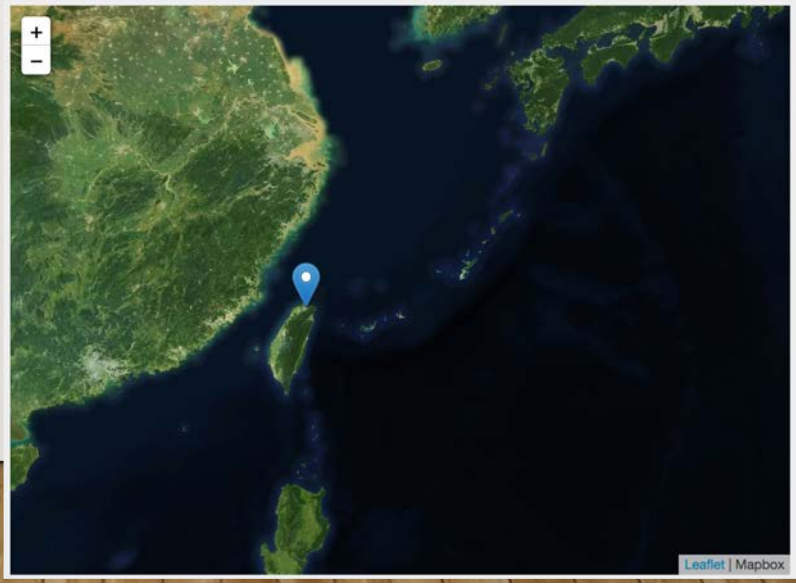

Wildfire Prediction
Please input data
Enter the X:
1
Enter the Y:
4
Enter the day:
9
Enter the month:
1
Enter the FFMC:
91.5
Enter the DMC:
130.1
Enter the DC:
807.1
Enter the ISI:
7.5
Enter the temp:
21.3
Enter the RH:
35
Enter the wind:
2.2
Enter the rain:
0
Predict

介面介紹

Original Raw Image:



The satellite images :



Predict

The area is:

On Fire

The output is On Fire

未來展望

- 擴大偵測範圍到國家，洲，甚至全球
- 增加衛星影像在介面中，以提供給專家作為參考
- 繼續嘗試訓練出準確率更高的model，以提供更準確的情報

結論

- 此偵測系統主要利用位子，天氣狀態，火災潛在成因等13個變數來判斷該地區是否有火災發生
- 利用機器學習來訓練偵測，能使系統考量更多參數
- 之後將加入衛星影像以及擴大範圍
- 參數包含全面且有即時衛星影像，非常適合專家學者們拿來做生態的監控

THE END