Universidad de san Carlos de Guatemala

Inteligencia Artificial 1

Vacaciones de diciembre 2021

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201800464

Proyecto 1 Ejercicio 2

código: PabloAndresArg/Proyecto1IA_Ejercicio2_201800464 (github.com)

C: > Users > Pablo > Desktop > 9 SEMESTRE > IA > CLASE > TAREA5 > Proyecto1IA_Ejercicio2_201800464 > proyecto1_ejercicio2.py

```python
#PABLO ANDRES ARGUETA HERNANDEZ 201800464
from sklearn.linear_model import LinearRegression
from sklearn.preprocessing import PolynomialFeatures
from sklearn.metrics import mean_squared_error, r2_score
import matplotlib.pyplot as plt
import numpy as np

x = np.asarray([0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,3
y = np.asarray([0,1,1,2,6,6,9,12,17,19,20,21,24,25,28,34,35,36,38,39,47,50,61,61,70,77,87,95,126,137,155,1
plt.scatter(x,y)

poly_degree = 3
polynomial_features = PolynomialFeatures(degree = poly_degree)
x_transform = polynomial_features.fit_transform(x)

model = LinearRegression().fit(x_transform, y)
y_new = model.predict(x_transform)

rmse = np.sqrt(mean_squared_error(y, y_new))
r2 = r2_score(y, y_new)
print('RMSE: ', rmse)
print('R2: ', r2)

x_new_min = 0.0
x_new_max = 690.0

x_new = np.linspace(x_new_min, x_new_max, 705)
x_new = x_new[:,np.newaxis]

x_new_transform = polynomial_features.fit_transform(x_new)
y_new = model.predict(x_new_transform)

plt.plot(x_new, y_new, color='Yellow', linewidth=3)
plt.grid()
plt.xlim(x_new_min,x_new_max)
plt.ylim(0,876500)
title = 'Degree = {}; RMSE = {}; R2 = {}'.format(poly_degree, round(rmse,2),
round(r2,2))
plt.title("Prediction of Infection of Covid-19 in Guatemala of January 2022\n " + title.
```

TERMINAL PROBLEMS OUTPUT DEBUG CONSOLE

```
Windows PowerShell
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Prueba la nueva tecnología PowerShell multiplataforma https://aka.ms/pscore6

PS C:\Users\Pablo\Desktop\9 SEMESTRE\IA\CLASE\TAREA5\Proyecto1IA_Ejercicio2_201800464> py .\proyecto1_ejercicio2.py
RMSE:  25517.475478018994
R2:  0.9839217000907781
```

GRAFICA:

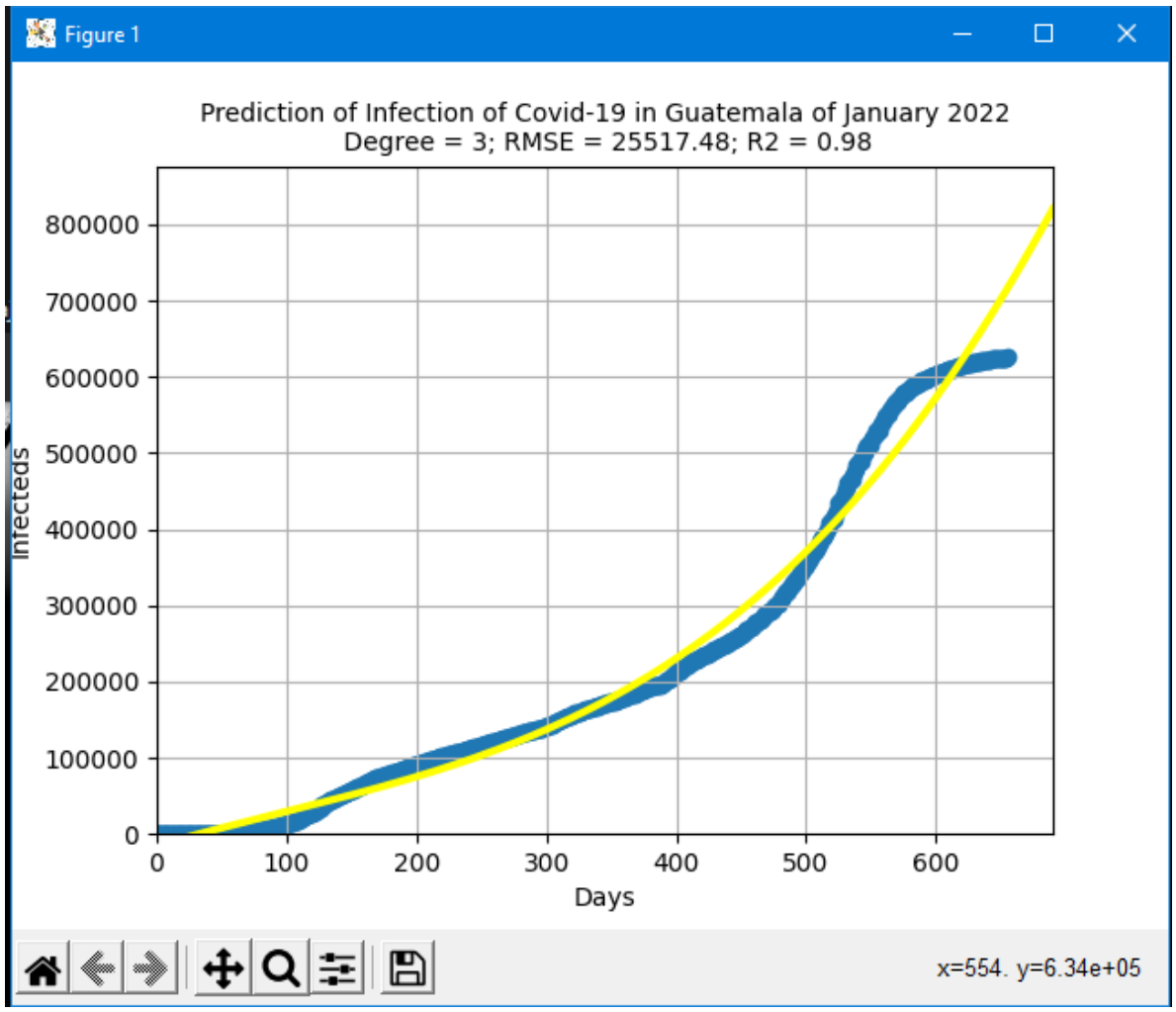
Figure 1
Prediction of Infection of Covid-19 in Guatemala of January 2022
Degree = 3; RMSE = 25517.48; R2 = 0.98
Infecteds
800000
700000
600000
500000
400000
300000
200000
100000
0
0
100
200
300
400
500
600
Days
x=554. y=6.34e+05