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Inteligencia Artificial 1

Escuela de Vacaciones diciembre 2021

Hoja de Trabajo

Predicción Covid enero 2022

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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

print(x,y)

# data
#x=
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])[ :,np.newaxis]

#y=
y =
np.asarray([0,38,644,5336,19011,50979,74893,92409,108104,122774,138236,159632,174653,194
756,228477,255833,296438,369626,475548,563257,601657,618436,625166])[ :,np.newaxis]

plt.scatter(x,y)

# regression transform
poly_degree = 4
polynomial_features = PolynomialFeatures(degree = poly_degree)
x_transform = polynomial_features.fit_transform(x)

# fit the model
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model = LinearRegression().fit(x_transform, y)

y_new = model.predict(x_transform)


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


# prediction
x_new_min = 0.0
x_new_max = 23.0

x_new = np.linspace(x_new_min, x_new_max, 23)
x_new = x_new[:, np.newaxis]

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


# plot the prediction
plt.plot(x_new, y_new, color='coral', linewidth=3)
plt.grid()
plt.xlim(x_new_min, x_new_max)
plt.ylim(0, 800000)

title = 'Degree = {}; RMSE = {}; R2 = {}'.format(poly_degree, round(rmse, 2), round(r2, 2))
plt.title("Prediction of Infection of Covid-19 in Guatemala\n " + title, fontsize=12)
plt.xlabel('x')
plt.ylabel('y')
plt.show()

```

Prediction of Infection of Covid-19 in Guatemala
Degree = 4; RMSE = 27175.01; R2 = 0.98

