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Inteligencia Artificial 1

Escuela de Vacaciones diciembre 2021

**Hoja de Trabajo**

**Predicción Covid enero 2022**

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([0,38,644,5336,19011,50979,74893,92409,108104,122774,138236,159632,174653,194756,228477,255833,296438,369626,475548,563257,601657,618436,625166])[:,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

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()

Gráfico, Gráfico de líneas

Descripción generada automáticamente