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Module 2 Cheatsheet: Use of Generative AI for Data Science

Popular GenAI tools

Name of model Usage Link EDA tool to identify key insights on data https://www.hal9.com/ Hal9 Columns.ai Data visualization tool to create useful charts https://columns.ai/ Akkio Data visualization tool to create data plots like regression plots, box plots, correlation heatmaps, and so on https://www.akkio.com/

Important prompts for generating data insights and visualizations

Task Prompt Write a Python code to generate the statistical description of all the features used in the data set. Generate a statistical description of data. Include "object" data types as well. Create regression plots between a target variable and a continuous Write a Python code to generate a regression plot between a target variable and a source variable of valued source variable. a data frame. Write a Python code to generate a box plot between a target variable and a source variable of a data Create box plots between a target and categorical source variable. frame. Evaluate parametric interdependence using correlation, p-value and Write a Python code to evaluate correlation, pearson coefficient, and p-values for all attributes of a pearson coefficient data frame against the target attribute. Write a Python code that performs the following actions: Group variables to create pivot tables. Create a p-color plot for the 1. Groups three attributes as available in a data frame df. 2. Creates a pivot table for this group, using a target attribute and aggregation function as mean. pivot table. 3. Plots a peolor plot for this pivot table.

Important prompts for model development and refinement

Task Prompt Write a Python code that performs the following tasks: Linear regression between a single source attribute and 1. Develops and trains a linear regression model that uses one attribute of a data frame as the source variable target attribute and evaluate it and another as a target variable. 2. Calculates and displays the MSE and R² values for the trained model. Write a Python code that performs the following tasks: Linear regression between multiple source attributes and 1. Develops and trains a linear regression model that uses some attributes of a data frame as the source variables target attributes and evaluate it and one of the attributes as a target variable. 2. Calculates and displays the MSE and R² values for the trained model. Write a Python code that performs the following tasks: 1. Develops and trains multiple polynomial regression models, with orders 2, 3, and 5, that use one attribute of a Polynomial regression model with single source and data frame as the source variable and another as a target variable. target variable 2. Calculates and displays the MSE and R^2 values for the trained models. 3. Compares the performance of the models. Write a Python code that performs the following tasks: Pipeline creation for scaling, polynomial feature 1. Create a pipeline that performs parameter scaling, polynomial feature generation, and linear regression. Use the set of multiple features as before to create this pipeline. 2. Calculate and display the MSE and R^2 values for the trained model.

creation, and linear regression

Write a Python code that performs the following tasks:

- 1. Use polynomial features for some of the attributes of a data frame.
- 2. Perform a grid search on a ridge regression model for a set of values of hyperparameter alpha and polynomial Grid search with ridge regression and cross validation features as input.
 - 3. Use cross-validation in the grid search.
 - 4. Evaluate the resulting model's MSE and R^2 values.

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