Technical Test - Mentor Data Science & AI

Technical Test Objectives:

Technical test ini dikhususkan sebagai proses seleksi dan penilaian untuk posisi Mentor - AI & Data Science. Tujuan pokok dari test ini adalah ingin mengetahui technical skills dari kandidat dalam membuat aplikasi AI.

Cara Pengerjaan

Kirimkan hasil pengerjaan technical test ke email berikut david@skilvul.com, cc mentors@skilvul.com, natasha@markoding.com, herviyani@markoding.com , debby@skilvul.com maksimal 3 hari setelah kamu menerima instruksi pengerjaan technical test ini.

Jika ada pertanyaan, silahkan ditanyakan melalui tim rekrutmen kami yang terhubung melalui chat atau email ke debby@skilvul.com, cc david@skilvul.com.

Case Study: Predictive Analytics for E-commerce

Business Context:
You are hired as a Data Science and AI for an e-commerce company named "Terra Store." Terra Store is looking to enhance its marketing strategy by predicting customer purchase behavior based on historical data. The company wants to build an AI-powered application that can provide insights into which products a customer is likely to purchase next.

Problem Statement:
Terra Store has provided you with a dataset containing information about customer interactions, purchases, and product details. Your task is to **develop a web-based AI**

application that predicts the next product a customer is likely to buy. The application should be user-friendly, allowing marketing teams to target customers more effectively.

Data Description:

The dataset includes the following information:

Customer Interactions:

- Customer ID
- Page views
- Time spent on the website

Purchase History:

- Customer ID
- Product ID
- Purchase date

Product Details:

- Product ID
- Category
- Price
- Ratings

This is the example datasets you can also use:

https://drive.google.com/drive/folders/1dFtJDHmSsJ9Mw6okNEnJoVN1_seNI3Co?usp=sharing

customer_interactions.csv includes information about customer interactions on the website, such as the number of page views and time spent.

purchase_history.csv contains records of customer purchases, including the product purchased and the date of purchase.

product_details.csv provides details about each product, such as its category, price, and ratings.

You can customize the dataset by adjusting the number of records.

Key Tasks:

Data Exploration and Preprocessing:

- Explore the provided dataset to understand the characteristics of customer interactions and purchase history.
- Perform any necessary data preprocessing steps to handle missing values or outliers.

Model Development:

- Build a predictive model that can forecast the next product a customer is likely to purchase.
- Choose an appropriate machine learning algorithm and explain the reasons behind your selection.
- Train the model on historical data and evaluate its performance using relevant metrics.

Web Application Development:

- Create a web-based interface for the predictive analytics application.
- Users should be able to input a customer ID, and the application should return the top N recommended products for that customer.
- You can use any framework for web applications, but you must use Python for AI development

User Interface (UI) Design:

- Design a user-friendly interface that allows marketing teams to easily interact with the application.
- Visualize the predicted product recommendations in an understandable format.

Documentation:

- Document the entire process, including data exploration, model development, web application development, and deployment.
- Include a README file with clear instructions on how to use the application.

Deliverables:

- Source code of the web-based AI application in GitHub Repository
- Website URL

- Documentation explaining the approach, code structure, and any key decisions made.
- A README file with instructions for running the application.

Evaluation Criteria:

- Accuracy and effectiveness of the predictive model.
- User interface design and usability.
- Code quality, organization, and documentation.
- Creativity in addressing challenges.
- Clarity and completeness of documentation.

Note to Candidates:

- You are encouraged to showcase your creativity and problem-solving skills.
- Provide clear explanations for the choices you make in the data preprocessing and model development phases.
- The goal is to create a practical and effective solution that aligns with real-world business needs.