

Artificial Intelligence Midterm



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Class

2I

Department

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Study Program

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Case Study

You are a real estate businessman. You have several units of houses, land, and shophouses spread across Malang City, and property acquisition plans are seen as future prospects. As a businessman your goal is to get good sales, and good profits. To achieve that goal, you have several strategies that are divided into the following categories:

1. Determine the best selling price for each unit
2. Determine the target marketing on social media
3. Choose the right location for the property unit to be acquired
4. Determine the specifications for the house
5. Choose the priority of the unit owned, between a house, land, or shophouse

Your job is to choose one of the five strategies above!

Question

1. From one of the strategies you choose, define a clear problem with machine learning as the solution approach (**10 points**)
2. Develop a data ingestion strategy, determine what data will be processed, where it will come from (**10 points**)
3. Make a sample data, at least 20 items (**20 points**)
4. What kind of machine learning model/method will be used? (**10 points**)
5. Explain whether the method is supervised or unsupervised? (**10 points**)
6. Explain why do you choose this model? (**20 points**)
7. Explain the machine learning method that will be used! (**20 points**)

Answer

1. the data quality may be a problem because it may be insufficient and too old. not only that the fluctuability of the market would make it hard to maintain the model.
2. Historical Property Sales Data, Demographic Data, Amenities and Infrastructure Data, Crime Rates Data, Future Development Plans, School and Education Quality, Cost of Living Data. all the data can be provided by the land developer and/or BPS.

3. -

Sub-District	Appraised_ Price (Rp million)	Crime_ Rate per 1000 people	Education_ Quality (out of 10)	Cost_of_ Living_ Index (out of 100)
Klojen	1275	7	8.2	66
Blimbing	1290	6.5	8.1	65
Lowokwaru	1310	7.5	8	68
Kedungkandang	1260	7.3	7.8	67
Sukun	1305	7.1	8	66
Klojen	1285	7	8.3	66
Blimbing	1295	6.8	8	65
Lowokwaru	1320	7.4	8.2	68
Kedungkandang	1265	7	7.7	67
Sukun	1315	7.2	8.1	66
Klojen	1278	7	8.3	66
Blimbing	1302	6.6	8.1	65
Lowokwaru	1318	7.6	8.2	68
Kedungkandang	1270	7.2	7.8	67
Sukun	1312	7	8	66
Klojen	1280	7.1	8.2	66
Blimbing	1298	6.7	8	65
Lowokwaru	1315	7.5	8.3	68
Kedungkandang	1267	7.1	7.9	67
Sukun	1310	7.3	8.1	66

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4. Using the Multiple Linear Regression model to predict property prices. This model is chosen because it can effectively account for how several factors — such as Crime Rate, Education Quality, and Cost of Living — jointly influence the property's appraised value. It operates under the assumption that each factor has a linear relationship with the price.
 5. The approach is Supervised Learning because we're using known input data (features) and corresponding output data (property prices) to train our model on their relationship.
 6. Multiple Linear Regression is selected for its interpretability, simplicity, and as an initial benchmark; its transparent nature allows stakeholders to understand how individual factors influence property prices, and its straightforwardness offers a starting point before exploring more intricate models.
 7. Multiple Linear Regression predicts the property price by assuming a linear relationship between it and several influencing factors. It uses an equation linking the dependent variable (price) to independent variables (features like Crime Rate). During training, the model adjusts its internal parameters to minimize the difference between its predictions and actual prices, and once trained, it predicts prices for new data based on the learned relationships.