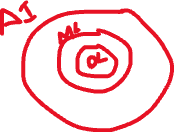
Human Excellence for Artificial Intelligence

Artificial Intelligence



1. See – Computer Vision
   1. Fairprice ( facial recognition )
   2. ATM for cash withdrawal
   3. Telsa autonomous ( object recognition)
2. Talk: - NLP- Natural language processing
   1. SIRI , Alexa
      1. ( Human-> System) - > voice
   2. Bots
      1. Human -> System chats
3. Understand language -> NLP
4. Understand data
   1. Records
   2. Images
   3. Videos
   4. Text

Machine Learning( subset of AI )

1. Understand data
   1. Understand->process/learn/Training data using algorithms for final prediction
      1. Supervised Learning ( if the output is known) ( labelled data)
         1. Regression-> Predicting Numeric value by taking all the other respective values
            1. Eg: resale price of HDB flat

Output => prediction of price( dependent variable)

Input Factors -> no of rooms, area, nearest mrt, bus stop, reno ( Independent variables)

* + - * 1. Algorithms:

Linear regression ->Sales forecast,revenue forecast

* + - 1. Classification -> predicting ( yes or no )
         1. Eg: Kishan or not ( image recognition ) ( binary ) Support vector
         2. Eg: BBC news dataset( Politics, sports, general, finance
         3. Eg3:, Faculty, Content Understanding, Overall exp, Duration( multi classification
         4. Loan approval
    1. Unsupervised Learning ( if the output is unknown)( unlabelled data)
       1. Clustering -> auto grouping ( unknown patterns discover w/o human intervention ) Apriori, k means

Deep Learning

1. Artificial Neural Networks
2. CNN( images )
3. RNN( text
4. Machine Learning ( eg: HDB resale prices ) ( eg: 1000 rows , 25 columns / fields / features ) ( historical data )
   1. Data Extraction ( excel,csv,DB)
      1. Many Independent fields(24columns) all factors responsible for price calculation)
      2. One Dependent field( price) ( EDA ) Exploratory data analysis)
   2. Data Preprocessing
      1. Find Missing data ( near to mrt in min)
         1. 25 rows got Null values
            1. Remove null values
            2. Replace with Mean/median/mode
      2. Remove duplicates ( if any )
   3. Data Preparation
      1. Create categorical data
      2. Create new columns/ calculations for better visualization
      3. Ignore some existing columns
      4. Select only important columns / features
         1. Eg : 1000 rows, 10 columns/ features
   4. Data Modelling
      1. Split data( historical) ( 1000 rows)( 70:30) or 80:20 or 75:25
         1. Out of 1000 historical rows + 10 columns( 9 independent+1 dependent)
            1. 700 rows will be training dataset(10 columns( 9 independent( x values )+1 dependent( y value) )

X train , y train

* + - * 1. 300 rows will be testing dataset 10 columns( 9 independent ( x values )++1 dependent ( y value) )

X test , y test

* + 1. Train model with algorithm
       1. 700 rows ( 9x values )+1 dependent( y value)
          1. 1 dependent value given to the algorithm( actual Price)
    2. Test model
       1. 300 rows ( X test , y test ) not passed into model , predicted price)
       2. One new predicted column for the dependent variable( predicted price) – Scored Label

|  |  |  |  |
| --- | --- | --- | --- |
| No of rooms | Actual price | Predicted price | Difference |
| 3 | 400k | 420k |  |
| 4 | 550k | 580k |  |
| 4 | 540k | 520k |  |
| 4 | 560k | 540k |  |
| 4 | 500k | 450k |  |
|  |  |  | Average of difference |

* + 1. Evaluate model
       1. ERROR ( difference between Predicted – Actual price )
       2. Metrics( regression )
          1. RMSE( lesser )
          2. MSE
          3. MAE
          4. COD/ r2( 0-1) , nearer to 1 the better the model
       3. Metrics ( classification )
          1. AUC
          2. Accuracy
          3. TP,TN,FP,FN

1. Tools
   1. Python
   2. R
   3. Azure Machine Learning
   4. AWS sage maker

Text

Description automatically generated with medium confidence

Graphical user interface

Description automatically generated with medium confidence

A picture containing text

Description automatically generated

Text

Description automatically generated with low confidence

A picture containing text

Description automatically generated

A picture containing text

Description automatically generated