TechNest Intern

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MSME

सूक्ष्म , लघु एवं मध्यम उद्यम

MICRO, SMALL & MEDIUM ENTERPRISES

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LEARN -- BUILD -- EXCEL

Machine Learning

INTERNSHIP PROGRAM

Machine Learning

TASK INSTRUCTION

- MUST ATTEMPT FOUR OUT FOUR TASKS
- SUBMIT BEFORE DEADLINE
- USE INTERNET RESOURCES
- FOLLOW GROUP UPDATES

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📊 TASK 1: DECISION TREE IMPLEMENTATION

OBJECTIVES:

- UNDERSTAND THE LOGIC BEHIND DECISION TREES.
- VISUALIZE TREE SPLITS AND INTERPRET DECISIONS.
- APPLY THE MODEL TO A CLASSIFICATION DATASET.

DESCRIPTION:

BUILD AND VISUALIZE A DECISION TREE MODEL USING SCIKIT-LEARN FOR CLASSIFICATION OR REGRESSION. INTERPRET THE MODEL'S LOGIC AND EVALUATE ITS PERFORMANCE.

DELIVERABLE:

A JUPYTER NOTEBOOK WITH DATA PREPROCESSING, MODEL TRAINING, EVALUATION METRICS, AND TREE VISUALIZATION.

DATASET:

🔗 HTTPS://WWW.KAGGLE.COM/DATASETS/UCIML/IRIS

(USE IRIS DATASET OR ANY CLASSIFICATION DATASET)

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🧠 TASK 2: TASK 2: SENTIMENT ANALYSIS WITH NLP

OBJECTIVES:

- APPLY TEXT PREPROCESSING TECHNIQUES.
- USE TF-IDF FOR VECTORIZATION.
- TRAIN A LOGISTIC REGRESSION CLASSIFIER.

DESCRIPTION:

PERFORM SENTIMENT CLASSIFICATION ON TEXTUAL CUSTOMER REVIEWS USING NLP TECHNIQUES.

DELIVERABLE:

NOTEBOOK WITH TF-IDF PREPROCESSING, LOGISTIC REGRESSION MODEL, AND CLASSIFICATION RESULTS.

DATASET:

🔗 HTTPS://WWW.KAGGLE.COM/DATASETS/KAZANOVA/SENTIMENT140

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💡 TASK 3: IMAGE CLASSIFICATION MODEL

OBJECTIVES:

- UNDERSTAND CNN ARCHITECTURE.
- PREPROCESS IMAGE DATA.
- EVALUATE MODEL PERFORMANCE.

DESCRIPTION:

CREATE AN IMAGE CLASSIFICATION MODEL USING CNN IN TENSORFLOW OR PYTORCH ON A STANDARD IMAGE DATASET.

DELIVERABLE:

A FULLY FUNCTIONAL MODEL NOTEBOOK + TEST ACCURACY EVALUATION.

DATASET:

🔗 HTTPS://WWW.KAGGLE.COM/DATASETS/PAULTIMOTHYMOONEY/CHEST-XRAY-PNEUMONIA

(OR USE MNIST: HTTPS://WWW.KAGGLE.COM/DATASETS/ODDRATIONALE/MNIST-IN-CSV)

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⚖️TASK 4: RECOMMENDATION SYSTEM

OBJECTIVES:

- UNDERSTAND COLLABORATIVE FILTERING.
- WORK WITH USER-ITEM MATRIX.
- EVALUATE RECOMMENDATIONS WITH ACCURACY METRICS.

DESCRIPTION:

BUILD A RECOMMENDATION ENGINE USING MATRIX FACTORIZATION OR COLLABORATIVE FILTERING METHODS.

DELIVERABLE:

NOTEBOOK WITH IMPLEMENTATION AND EVALUATION RESULTS.

DATASET:

🔗 HTTPS://WWW.KAGGLE.COM/DATASETS/GROUPLENS/MOVIELENS-100K

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🔎 TASK 5: EXPLORATORY DATA ANALYSIS (EDA)

TASK 5: PREDICTIVE MODELING WITH RANDOM FOREST

OBJECTIVES:

- LEARN ENSEMBLE METHODS.
- TUNE HYPERPARAMETERS.
- MEASURE FEATURE IMPORTANCE.

DESCRIPTION:

TRAIN A RANDOM FOREST CLASSIFIER ON STRUCTURED DATA AND COMPARE IT WITH A DECISION TREE.

DELIVERABLE:

NOTEBOOK SHOWING MODEL COMPARISON, CONFUSION MATRIX, AND FEATURE IMPORTANCES.

DATASET:

🔗 HTTPS://WWW.KAGGLE.COM/DATASETS/BLASTCHAR/TELCO-CUSTOMER-CHURN

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Optional

🌬️ TASK 6: CLUSTERING WITH K-MEANS

OBJECTIVES:

- PERFORM UNSUPERVISED LEARNING.
- IDENTIFY OPTIMAL CLUSTERS WITH THE ELBOW METHOD.
- VISUALIZE CLUSTER ASSIGNMENTS.
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DESCRIPTION:

APPLY K-MEANS CLUSTERING TO SEGMENT DATA AND DRAW BUSINESS INSIGHTS.

DELIVERABLE:

NOTEBOOK WITH CLUSTER VISUALIZATIONS AND INSIGHTS.

DATASET:

🔗 HTTPS://WWW.KAGGLE.COM/DATASETS/VJCHOUDHARY7/CUSTOMER-SEGMENTATION-TUTORIAL

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Optional

🎥 TASK 7: TIME SERIES FORECASTING

OBJECTIVES:

- UNDERSTAND TIME SERIES COMPONENTS.
- TRAIN MODELS LIKE ARIMA OR PROPHET.
- VISUALIZE FORECASTS AND EVALUATE RMSE.

DESCRIPTION:

USE TIME SERIES ANALYSIS TO PREDICT FUTURE TRENDS IN RETAIL, SALES, OR FINANCE DATA.

DELIVERABLE:

NOTEBOOK WITH MODEL TRAINING, FORECAST GRAPHS, AND EVALUATION.

DATASET:

🔗 HTTPS://WWW.KAGGLE.COM/DATASETS/SHENBA/TIME-SERIES-DATASET

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🎯 TASK : RESUME + LINKEDIN OPTIMIZATION

OBJECTIVES:

- DESIGN A CLEAN, JOB-READY RESUME FOR DATA-RELATED ROLES.
- OPTIMIZE YOUR LINKEDIN HEADLINE, ABOUT SECTION, AND PROJECTS.
- BUILD YOUR PERSONAL BRAND AND NETWORK PROFESSIONALLY.

TOOLS: CANVA, RESUME.IO, LINKEDIN
DELIVERABLE: PDF RESUME + LINKEDIN URL
OUTCOME: BOOST EMPLOYABILITY AND ONLINE VISIBILITY.

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INSTRUCTION

- STORE ALL YOUR WORK-RELATED CODE AND FILES IN A GITHUB REPOSITORY.
- MAINTAIN PROPER COMMENTING IN YOUR CODE FOR BETTER UNDERSTANDING AND READABILITY.
- USE RESOURCES LIKE YOUTUBE, GOOGLE, AND CHATGPT TO HELP YOU COMPLETE TASKS EFFICIENTLY.
- COMPLETE ALL FOUR TASKS AND SUBMIT THEM WITHIN THE DEADLINE WHILE WORKING AT YOUR CONVENIENCE.
- 📄 COMPLETION CERTIFICATE WILL BE ISSUED AFTER SUBMISSION AND EVALUATION OF ALL TASKS.
- 📍 MAKE SURE TO DOCUMENT YOUR WORK CLEARLY AND PUBLISH KEY FINDINGS ON LINKEDIN TAGGING @TECHNEST INTERN.

THANK YOU