AI / ML Project -

Emotion Recognition-

Create a machine learning model that can recognize human emotions from facial expressions. Use image processing and deep learning techniques to train the model on labeled emotion datasets.

Emotion recognition technology holds significant potential to revolutionize various fields. By enabling machines to identify and understand human emotions, it opens avenues for enhanced human-computer interaction, personalized experiences, and improved mental health support. Emotion recognition can enhance user interfaces, making devices more intuitive and responsive.

It can aid in marketing and customer service by gauging customer sentiment and satisfaction. In healthcare, it can assist in diagnosing and treating mental health conditions. Moreover, emotion recognition technology can contribute to building empathetic AI systems, fostering emotional connections, and promoting overall well-being in our increasingly digital world.

Members working on the project-

21CE001, 21CE002 and 22AIML048

Timeline of the project-

The project will span a duration of 2 weeks. The timeline will be divided into distinct phases, including data exploration and preprocessing, algorithm selection and training, evaluation, and documentation. Each phase will be allocated specific days to ensure a systematic and efficient progression of the project.

Week 1:
Day 1: Research and gather preprocessed data for emotion recognition.
Day 2: Understand the data preprocessing steps applied and ensure data quality.
Day 3: Explore the preprocessed data and analyze its structure and characteristics.
Day 4: Research and select suitable machine learning algorithms for emotion recognition.
Day 5: Split the preprocessed data into training and testing sets.

Week 2:
Day 6: Implement and train the selected machine learning algorithm on training data.
Day 7: Optimization of the model using techniques like cross-validation or grid search.
Day 8: Evaluate the performance of the trained model on the testing data.
Day 9: Analyze the model's performance metrics, such as accuracy, precision.
Day 10:Document the entire model development process, including data preprocessing, algorithm selection, and model training.

Expected Outcomes-

The expected outcomes of the project include:

1. Development of an emotion recognition model capable of accurately classifying human emotions based on the preprocessed data.
2. Evaluation of the model's performance using appropriate metrics such as accuracy, precision.
3. Documentation of the project, including details of data preprocessing, algorithm selection, and model development process.

References-

1. "A Convolutional Neural Network for Facial Expression Recognition": https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6280108/

Data Science Project-
Creating a Calendar Heatmap-
The data science project aims to create a calendar heatmap in Power BI. The project involves analyzing and visualizing data over time using a calendar-based heat map. By aggregating data based on dates, the heatmap will provide an intuitive and visual representation of patterns and trends.

The project includes steps such as data preprocessing, date-based aggregation, and customizing the heatmap visualization in Power BI. The calendar heatmap will enable users to easily identify high and low activity periods, seasonality, and patterns in the data. The final deliverable will be an interactive and insightful heat map dashboard in Power BI.

Members working on this project-
21CS033, 21DCE106 and 22DCS039.

Timeline of the project-
Week 1:
Day 1: Define the scope and objectives of the project, focusing on the calendar heatmap visualization.
Day 2: Gather and clean the necessary data for the calendar heatmap.
Day 3: Explore Power BI visualizations and plan the design of the calendar heatmap.
Day 4: Import the cleaned calendar data into Power BI and create initial measures or calculated columns.
Day 5: Build the initial version of the calendar heatmap visualization.

Week 2:
Day 6: Test and refine the calendar heatmap, adjusting colors, tooltips, and interaction features.
Day 7: Incorporate additional features like dynamic filters to enhance usability.
Day 8: Perform comprehensive testing and iterate on the design based on feedback.
Day 9: Optimize the performance of the calendar heatmap visualization.
Day 10: Document the project process and prepare a report summarizing the project.

Expected outcomes-
1. Visual Representation: The project will result in a visually appealing and intuitive calendar-based heatmap. The heatmap will provide a clear representation of data patterns and trends over time..
2. Insightful Analysis: The heatmap will enable users to gain valuable insights from the data by visually analyzing patterns, seasonality, and trends.
3. Interactive Dashboard: The final deliverable will be an interactive Power BI dashboard that allows users to explore and interact with the calendar heatmap.
4. Improved Data Understanding: The calendar heatmap will enhance users' understanding of the data by providing a visual representation that is easy to interpret.

5. Communication and Reporting: The project will enable users to effectively communicate insights and findings through the interactive Power BI dashboard.

References-
1. Microsoft Power BI Documentation: The official documentation provided by Microsoft for Power BI contains detailed information on various visualizations and features, including creating custom visuals like a calendar heatmap.
https://docs.microsoft.com/en-us/power-bi/
2. Power BI Tips and Tricks Blog: This blog covers various tips and tricks for Power BI, including creating custom visualizations.
https://powerbi.tips/2018/07/create-a-custom-calendar-in-power-bi/