**EDA / Descriptive Statistics**

## Introduction:

Autism Spectrum Disorder (ASD) Data-Driven Analysis aims to derive actionable insights from video analytics data collected during the capture of videos. The project focuses on maximizing the effective utilization of data to better understand and support individuals with ASD. The purpose of this EDA document is to outline the strategy for exploring and analyzing data extracted from video analytics focusing on ASD. The business problem revolves around the lack of clarity on generating insights and dashboards from video analytics data. The primary objective is to maximize the effective utilization of this data, ensuring actionable insights to minimize adverse effects of specific behaviors. The constraint is to minimize manual report creation, promoting automation for efficient data utilization.

## Overall design strategy:

The overall design strategy involves leveraging data-driven analytics to extract meaningful insights from video data related to ASD. This will be achieved through the development of a visualization dashboard that provides actionable information in an automated manner. The focus will be on creating a user-friendly and intuitive interface to facilitate widespread use across different stakeholders.

## Data Overview:

The data comprises video analytics data captured during various scenarios related to ASD. It includes behavioral patterns, facial expressions, and other relevant features. The data set contains 28190 rows and 8 columns. The dataset will be pre-processed to handle missing values, outliers, and ensure data quality. Descriptive statistics, correlation analysis, and feature engineering will be performed to enhance the dataset's utility.

## **Purpose of Each Column:**

* uid: Identification of each record.
* asd\_project34\_video\_id: Unique video identification for project association.
* user\_name: Identification of the user capturing the video
* duration: Quantifies the length of the video.
* class\_name: Categorization of the video content
* probability: Likelihood of ASD presence in the video
* fps: Technical specification indicating frames per second
* date\_time: Timestamp for video capture.

## Users:

**The primary users of the visualization dashboard include:**

* **Caregivers and parents** - Gain insights into their child's behavior
* **Future autists** - Understand patterns for early intervention
* **Researchers** - Analyze data for scientific studies.

## Questions:

**Questions which will be answered by this visualization:**

* **Caregivers and parents**: What are the key behavioral patterns in my child's videos?
* **Future autists**: Are there identifiable early signs of ASD in videos?
* **Researchers**: Can patterns in video analytics contribute to scientific understanding?

## Describe Visualization and how it answers the questions:

**The visualization dashboard will include:**

Time-series graphs depicting behavioral patterns over time.

Heatmaps illustrating the correlation between facial expressions and behaviors.

Trigger identification charts based on anomaly detection algorithms.

Intervention effectiveness charts showcasing the impact of specific actions.

Real-time alerts and notifications for timely interventions.

The visualization effectively addresses the questions by providing clear and accessible insights into ASD-related behaviors. It empowers users to identify patterns, correlations, and effective interventions, fostering timely actions to minimize adverse effects.

**Visualization Overview:**

**Parents' Dashboard:**

* Visualize behavioral patterns over time.
* Identify significant changes in the child's behavior.

**Future Autists' Dashboard:**

* Analyze early signs and trends related to ASD.
* Provide insights into potential interventions.

**Researchers' Dashboard:**

* Visualize aggregated data for scientific analysis.
* Identify correlations and patterns contributing to ASD research.

## Conclusion:

By the end of the ASD Data-Driven Analytics project, we aim to achieve:

* A comprehensive understanding of ASD-related behavioral patterns.
* Dashboards catering to the specific needs of parents, future autists, and researchers.
* At least 90% actionable insights to guide interventions.
* Reduced manual effort in report creation.

This EDA document outlines the structure, purpose, and goals of the ASD Data-Driven Analytics project, emphasizing the importance of leveraging data for informed decision-making and intervention.