Semester Project - |||

Abstract

Project Title: Autism Prediction using Machine Learning

Domain / Technology: Machine Learning, Data Science, Artificial Intelligence

Application: Early screening and prediction system for Autism Spectrum Disorder (ASD) based on clinical and demographic data

Dataset: Dataset containing 800 records with 22 features, including demographic details, behavioral indicators, and clinical scores

Expected Algorithm / Processing: Logistic Regression, Support Vector Classifier (SVC), XGBoost; preprocessing techniques such as data cleaning, feature engineering, class balancing (Random Over Sampling), and standardization

Expected Output from Project: A reliable classifier capable of predicting Autism traits with high accuracy to support early screening and decision-making

Abstract

Autism is a complex neurological disorder that affects communication, social interaction, and behavior, and currently lacks definitive diagnostic methods. This project explores the use of Machine Learning to predict Autism Spectrum Disorder (ASD) from clinical and demographic data. The dataset consists of 800 records with 22 features. After data cleaning, exploratory data analysis, and feature engineering—including handling categorical inconsistencies, creating age groups, and deriving clinical score aggregates—class imbalance was addressed using Random Over Sampling (ROS). Features were standardized, and multiple machine learning models were trained and evaluated, including Logistic Regression, Support Vector Classifier (SVC), and XGBoost. Results demonstrated that Logistic Regression and SVC achieved the best balance of training and validation performance, with high accuracy in identifying autistic traits. The findings highlight how machine learning can support early screening and decision-making for Autism, especially in the absence of standardized diagnostic tools.

Team Members

1. Sudarshan Bharat Patil (TY-DS-05-231106004)

2. Kalpesh Kishor Patil (TY-DS-04-231106003)

3. Devesh Bhalchandra Desale (TY-DS-09-231106009)

4. Digambar Gautam Pawar (TY-DS-19-231106020)