

# Early Detection of Autism Spectrum Disorder Using Machine Learning Techniques

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**Abstract:** Autism Spectrum Disorder (ASD) is a brain development issue affecting interaction, communication, and conduct. Timely identification is key to giving prompt clinical and mental aid, which can vastly increase future results. In our study, we tackle this issue by developing a machine learning model for detecting ASD in children aged 12 to 36 months. Using one Kaggle-sourced dataset with up to 507 instances— including all responses to ten binary screening questions coupled along with relevant demographic details such as respective age, assigned gender, and jaundice status precisely at birth—we carefully preprocess all of the data through removing incomplete records and further converting text directly into numerical values.

We carefully employ a Support Vector Machine (SVM) classifier, which was chosen for its strength when handling high-dimensional data and for its ability to define clear decision boundaries. Our experiments clearly show that the SVM-based model can achieve high accuracy. It does this in distinguishing ASD from non-ASD cases. These results show the potential of machine learning to streamline early ASD diagnosis, reducing, in addition, both the cost and time associated with customary screening methods. Future work will aim to grow dataset diversity along with carefully validating the model over longer periods in order to further improve its practical application in clinical settings..

**Keywords:** Autism Spectrum Disorder (ASD), Machine learning, Support Vector (SVM)

