Early Detection of Autism Spectrum Disorder in Children Using Machine Learning Models

A machine learning model **was created** to predict potential cases of **autism spectrum disorder (TEA)** in children. The model, which was trained using data collected from children aged 4 to 11 years, focuses on identifying relevant indicators and patterns that could signal early (TEA) traits. Data such as age, gender, family medical history, behavioral assessments, and sociodemographic factors was carefully collected and analyzed to ensure consistency in predictions. Several classification algorithms were compared, including logistic regression, decision trees, and random forests, to determine the most efficient approach in terms of accuracy and interpretability. Random Forest showed the highest precision and the best balance between precision and recall, minimizing critical classification errors (false positives and, especially, false negatives). Behavioral variables proved to be the most relevant, while demographic and medical factors had an influence, though to a lesser extent. The model that performed best was selected for final evaluation. Results showed that (TEA) indicators could be predicted with high accuracy, potentially aiding early detection efforts. This means that healthcare professionals may use the model as a decision-support tool to refine screening processes and improve clinical outcomes. The study also shows how machine learning can be applied to public health initiatives, especially in regions where access to specialized medical professionals is limited. In places like Tierra del Fuego, early detection might reduce diagnostic delays and offer tailored interventions for affected children. In conclusion, a machine learning model like this one can help healthcare professionals make more informed decisions, improve medical accessibility, and contribute to the development of data-driven solutions for pediatric (TEA) diagnosis.