

## **Abstract:**

Autism spectrum disorder (ASD) is a developmental disability caused by differences in the brain. People with ASD often have problems with social communication and interaction, and restricted or repetitive behaviors or interests. People with ASD may also have different ways of learning, moving, or paying attention.

Our project is to develop an expandable AI to screen autism in children.

## **Dataset and Attributes**

Case_No	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	Age_Mons	Qchat-10-Score	Sex	Ethnicity	Jaundice	Family_mem_with_ASD	Who completed the test	Class/ASD Traits
0	1	0	0	0	0	0	1	1	0	1	28	3	f	middle eastern	yes	no	family member	No
1	2	1	1	0	0	0	1	1	0	0	36	4	m	White European	yes	no	family member	Yes

A1- Does your child look at you when you call his/her name?

A2-How easy is it for you to get eye contact with your child?

A3-Does your child point to indicate that s/he wants something?

A4- Does your child point to share interest with you?

A5- Does your child pretend?

A6- Does your child follow where you're looking?

A7- If you or someone else in the family is visibly upset, does your child show signs of wanting to comfort them?

A8- Would you describe your child's first words as:

A9- Does your child use simple gestures?

A10- Does your child stare at nothing with no apparent purpose?

Qchat-10-score-score of A1-10 out of 10

## **Explainable AI and How its implemented**

Explainable artificial intelligence (XAI) is a set of processes and methods that allows human users to comprehend and trust the results and output created by machine learning algorithms. Explainable AI is used to describe an AI model, its expected impact and potential biases. It helps characterize model accuracy, fairness, transparency and outcomes in AI-powered decision making. Explainable AI is crucial for an organization in building trust and confidence when putting AI models into production.

There are 2 methods in XAI:

·Shap:

It stands for Shapley Additive explanations. This method aims to explain the prediction of an instance/observation by computing the contribution of each feature to the prediction.

·Lime:

It stands for Local Interpretable Model Agnostic Explanation. The local aspect means that it is used to explain individual predictions of a machine learning model. It is used to explain single instance.

**Procedure:**

- 1) Import Libraries
- 2) Import Dataset
- 3) Prepare the data(preprocessing)
- 4) Import shap-!pip install shap
- 5) Import Lime-!pip install lime
- 6) fit and Train model(model used Random Forest)
- 7) predict the model(using shap and Lime)

**Conclusion:**

Both shap and lime will help you to predict and visualize data to make it easier for humans to understand.