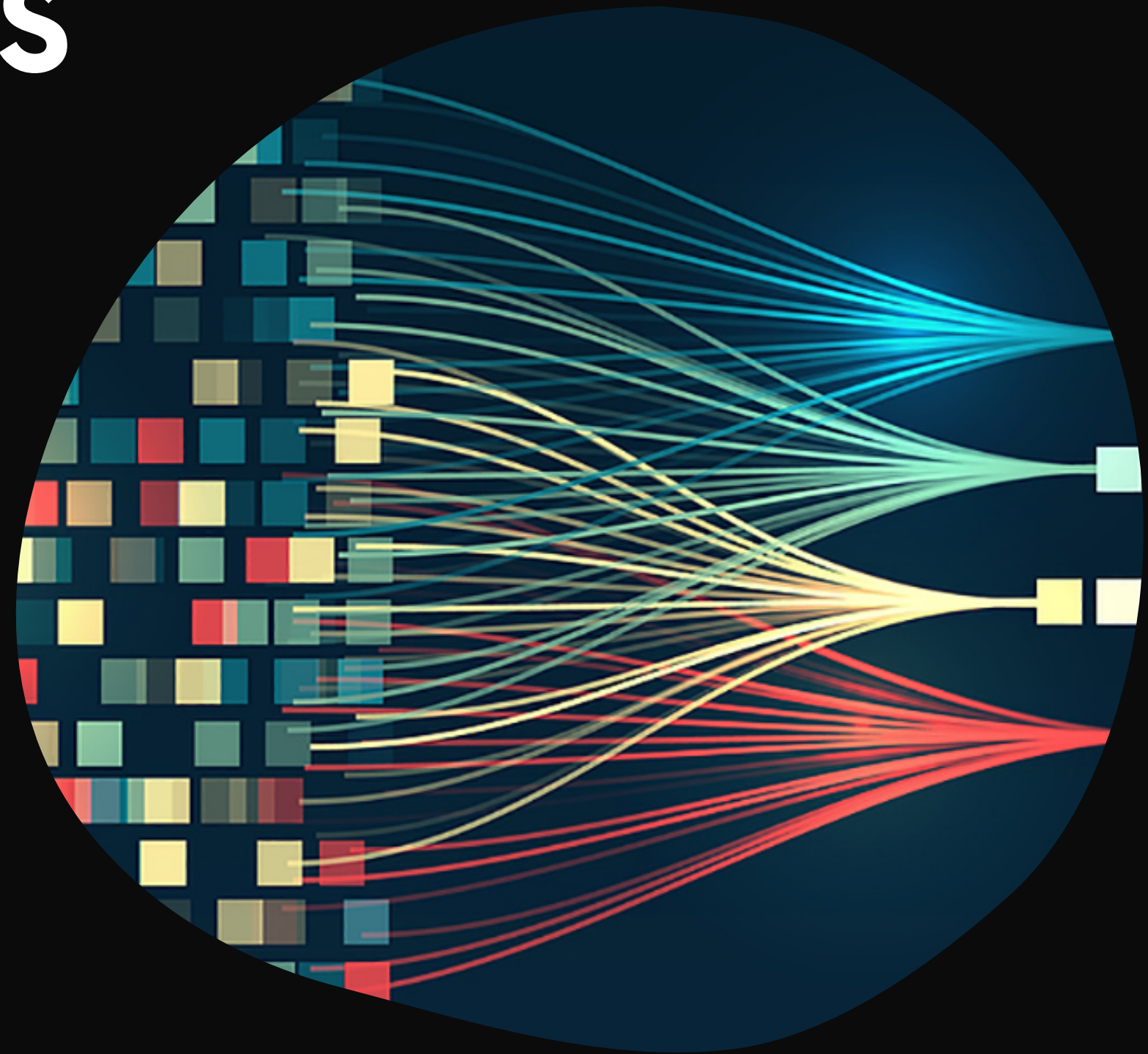


FACTOR ANALYSIS

- CANUL JORGE
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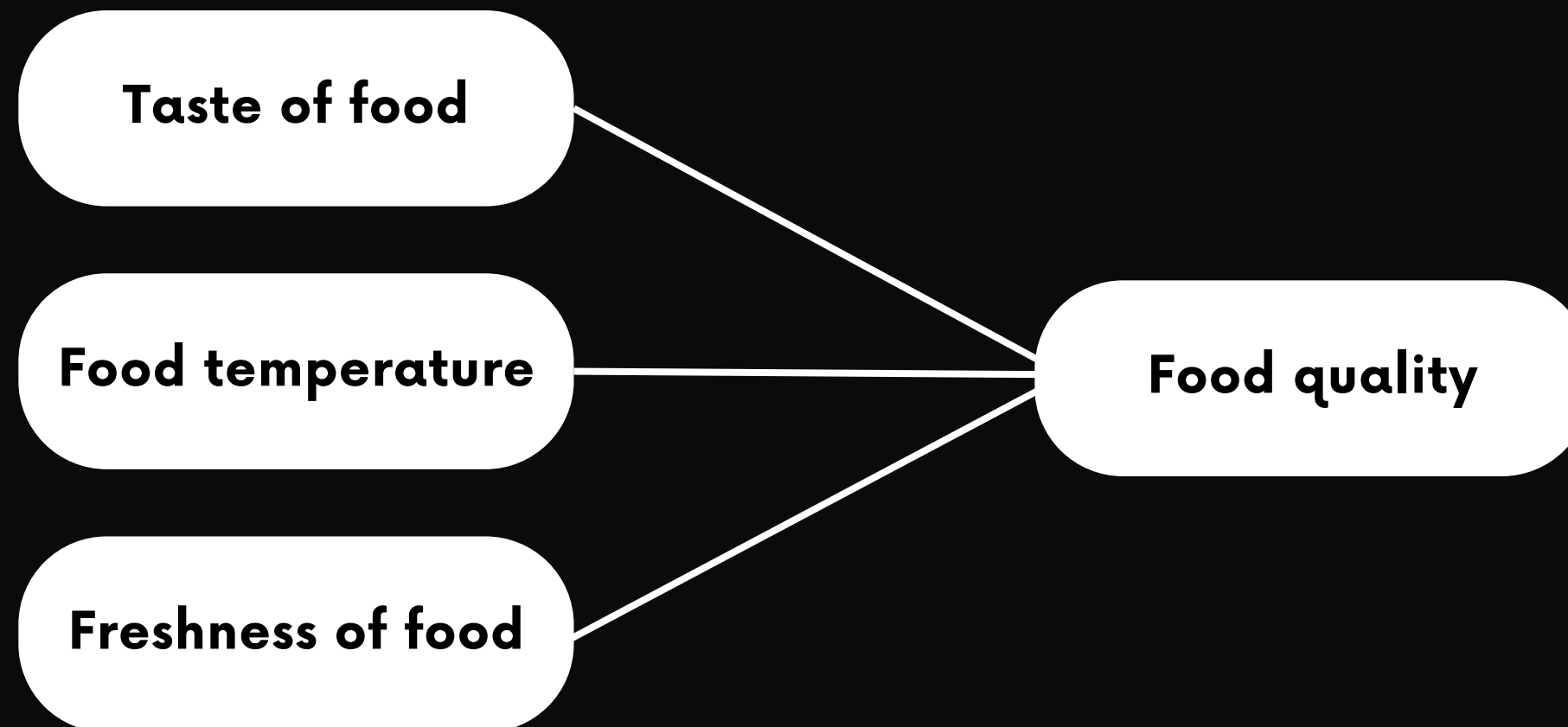


WHAT IS FACTOR ANALYSIS?

Factor analysis is a technique that is used to reduce a large number of variables into fewer numbers of factors. This technique extracts maximum common variance from all variables and puts them into a common score.

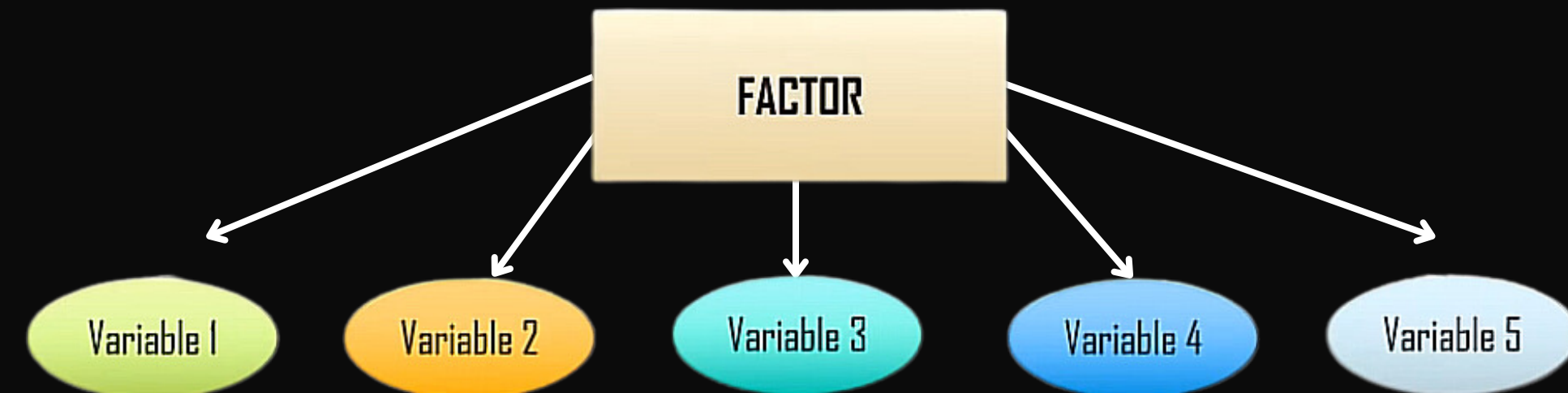


FOR EXAMPLE:



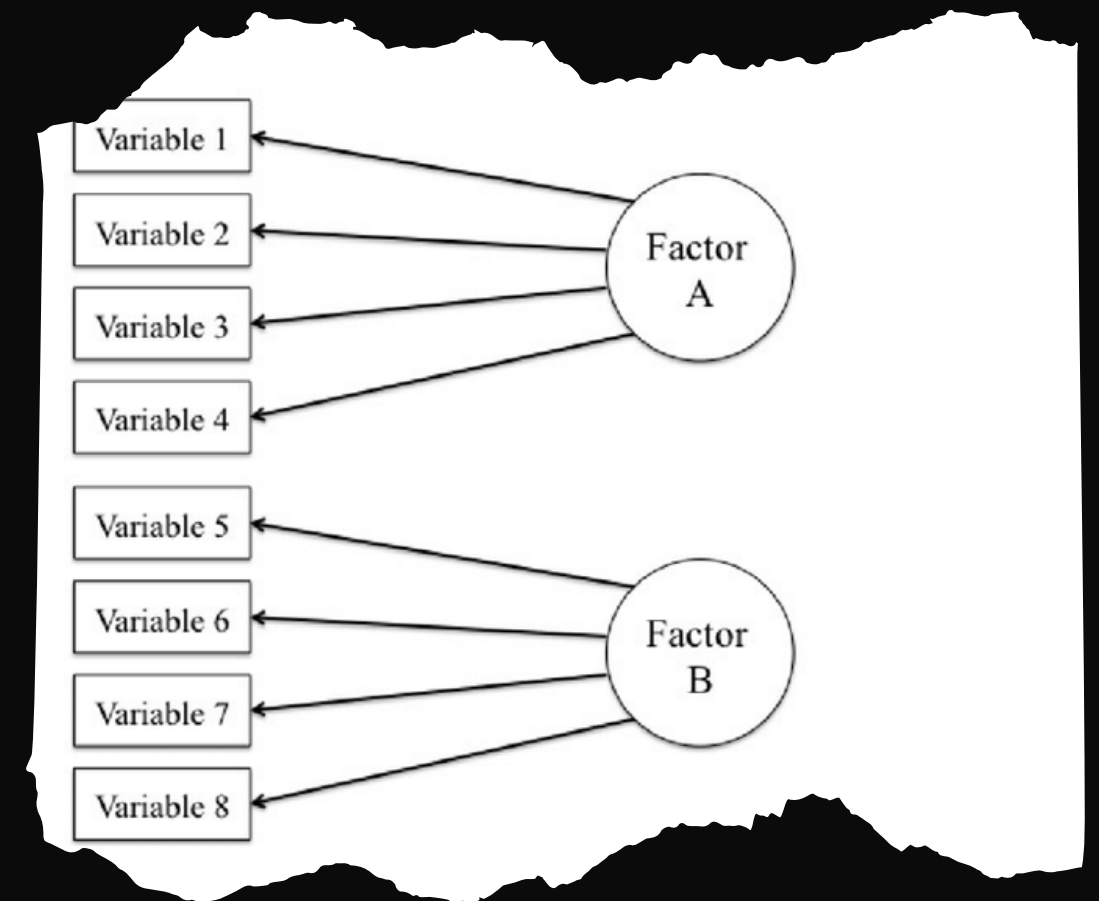
CHARACTERISTICS

- Reduce a large number of variables into fewer numbers of factors.
- Puts maximum common variance into a common score.
- Associates multiple observed variables with a latent variable.
- As the same numbers of factors and variables, where each factor contains a certain amount of overall variance.
- It is also used to find the fundamental structure of a huge set of variables.

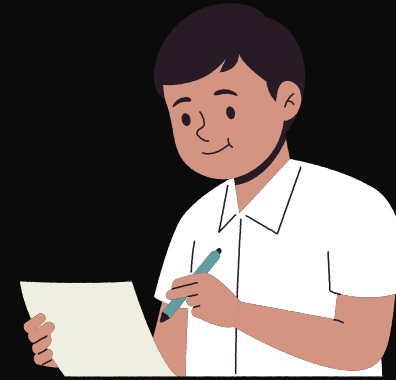


BENEFITS

- The process provides a more concise and easily understandable representation of the data, removing unnecessary complexity. Factor analysis enhances interpretability and enables clearer insights into the underlying structure and relationship within the dataset.
- Capture the most impactful factors, thus enhancing the predictive capabilities of machine learning models.
- It can be utilized to determine hidden dimensions or limitations, which may or may not be obvious via direct analysis.

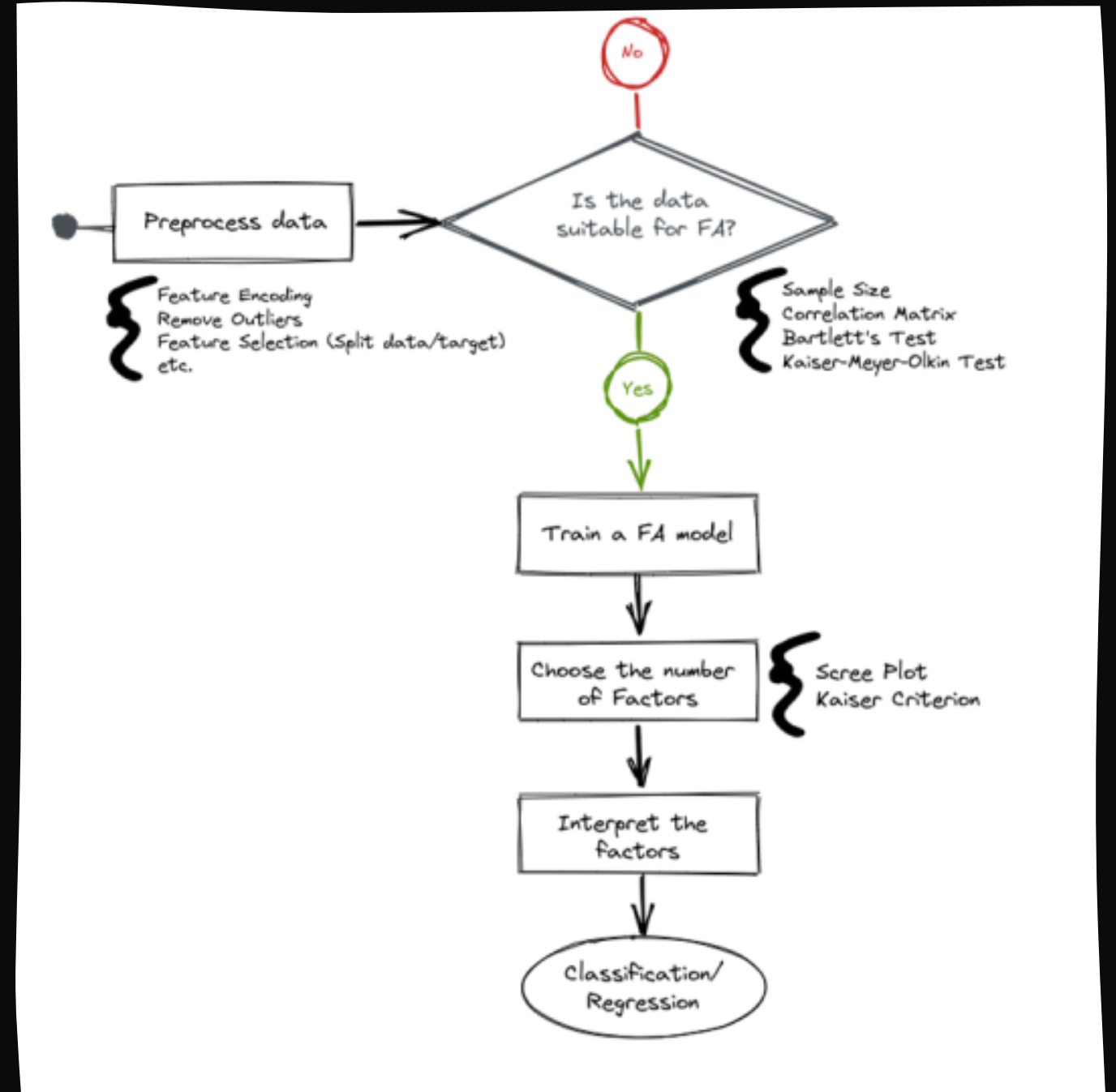


PRACTICAL EXAMPLE:



As an example, the process described is about a Student Performance Dataset:

The dataset originally has 33 variables and about 395 students from two Portuguese schools in their Math class. The features include student grades, demographic, social, and school-related information. We have information about the first (G1), second (G2), and final grade (G3), but we'll try to predict G3 without using G1 and G2 since these variables are highly correlated with G3, and it is not useful to use G1 and G2 as we want to grasp exclusively the relationship of the other variables with G3. (Henrique, 2022)



REFERENCES:

- Henrique, A. (2022). Dimensionality reduction with factor analysis on student performance data. Medium. <https://medium.com/geekculture/dimensionality-reduction-with-factor-analysis-on-student-performance-data-fd4ca7082f63>
- Factor Analysis in Machine Learning. (s/f). Wwww.javatpoint.com. Retrieved from: <https://www.javatpoint.com/factor-analysis-in-machine-learning> Follow, D. (2020, enero 10). Introduction to factor analytics.
- GeeksforGeeks. <https://www.geeksforgeeks.org/introduction-to-factor-analytics/>
Upgrad Team (2023). What's Factor Analysis and its Types? Upgrad. Retrieved from: <https://www.upgrad.com/us/blog/what-is-factor-analysis-and-its-types>