**most 3 popular algorithm used in machine learning until now?**

**Linear Regression:**

Linear regression is a simple and widely used algorithm for supervised learning. It is used for predicting a continuous outcome variable (dependent variable) based on one or more predictor variables (independent variables) that have a linear relationship with the outcome.

**Decision Trees:**

Decision trees are versatile and intuitive algorithms used for both classification and regression tasks. They work by recursively splitting the dataset based on the most significant features, creating a tree-like structure of decisions. Popular variations include Random Forests and Gradient Boosted Trees.

**Support Vector Machines (SVM):**

SVM is a powerful algorithm for both classification and regression tasks. It works by finding the hyperplane that best separates different classes in a high-dimensional space. SVMs are effective in scenarios with complex decision boundaries and are particularly useful in image classification and text categorization.

**How to transfer nonlinear equation to linear equation?**

**Linearization by Taylor Series Expansion:**

If the nonlinear equation is not too complex, you can use a Taylor series expansion to linearize it. The idea is to approximate the nonlinear function with a linear function by considering only the first few terms of the Taylor series expansion.

**Inverse Transformation:**

If the nonlinear equation involves a reciprocal (inverse) relationship, you can often linearize it by taking the reciprocal of both sides.

**Change of Variables:**

Sometimes a change of variables can transform a nonlinear equation into a linear one. This involves introducing a new variable or transforming existing variables in a way that simplifies the equation.

**Substitution:**

Introducing new variables or substituting existing variables with new expressions can sometimes lead to linear equations.