# Diabetes Prediction System

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# Why Diabetes Prediction System

- A chronic condition affecting blood sugar levels.
- Types: Type 1, Type 2, Gestational Diabetes

# Why Predictive System

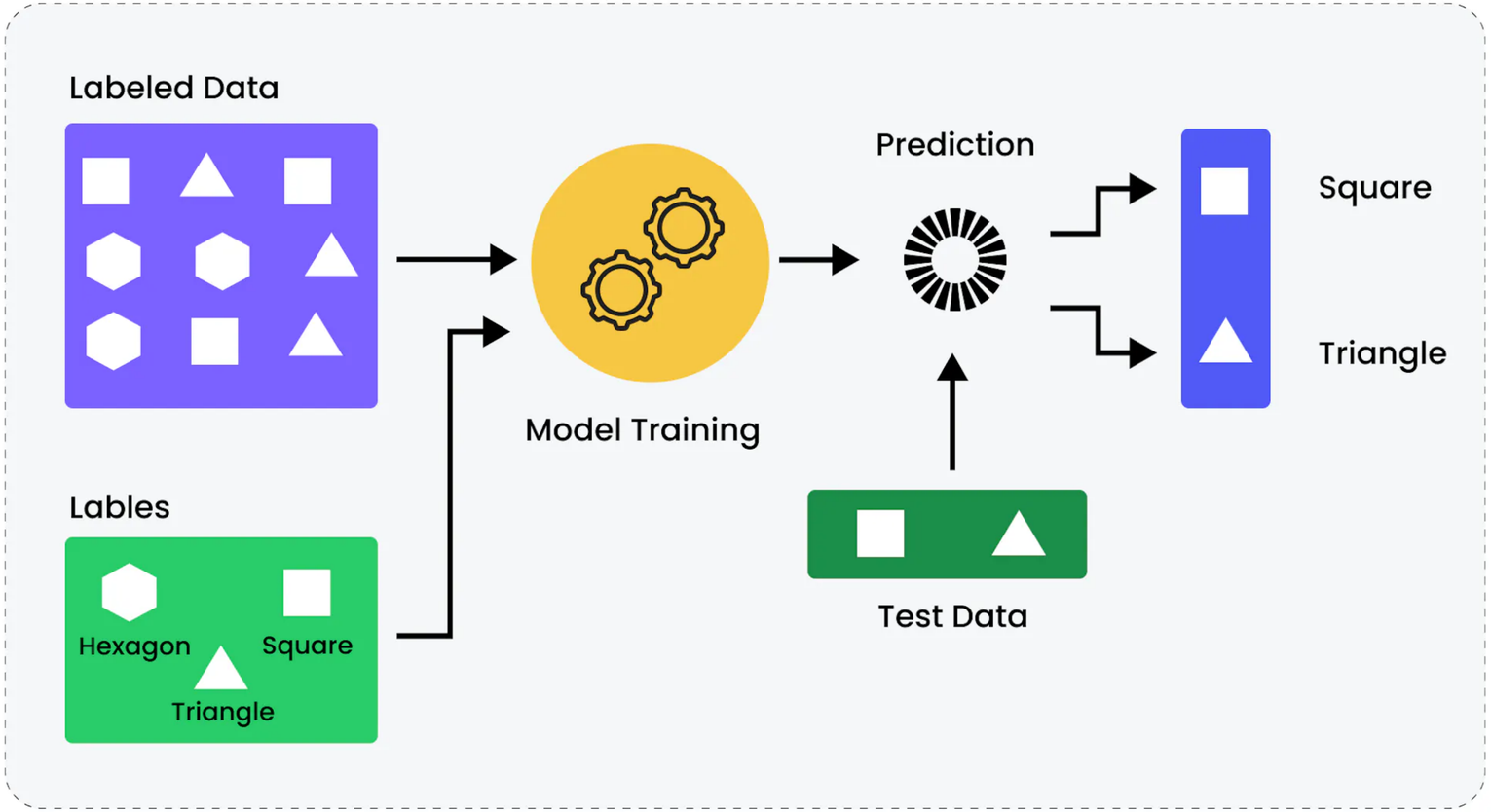
- Timely treatment, better outcomes
- Personalized care plans
- Efficient resource allocation

# Components of a Diabetes Prediction System

- Data Collection
- Machine Learning Algorithms
- Risk Assessment

# Supervise Learning

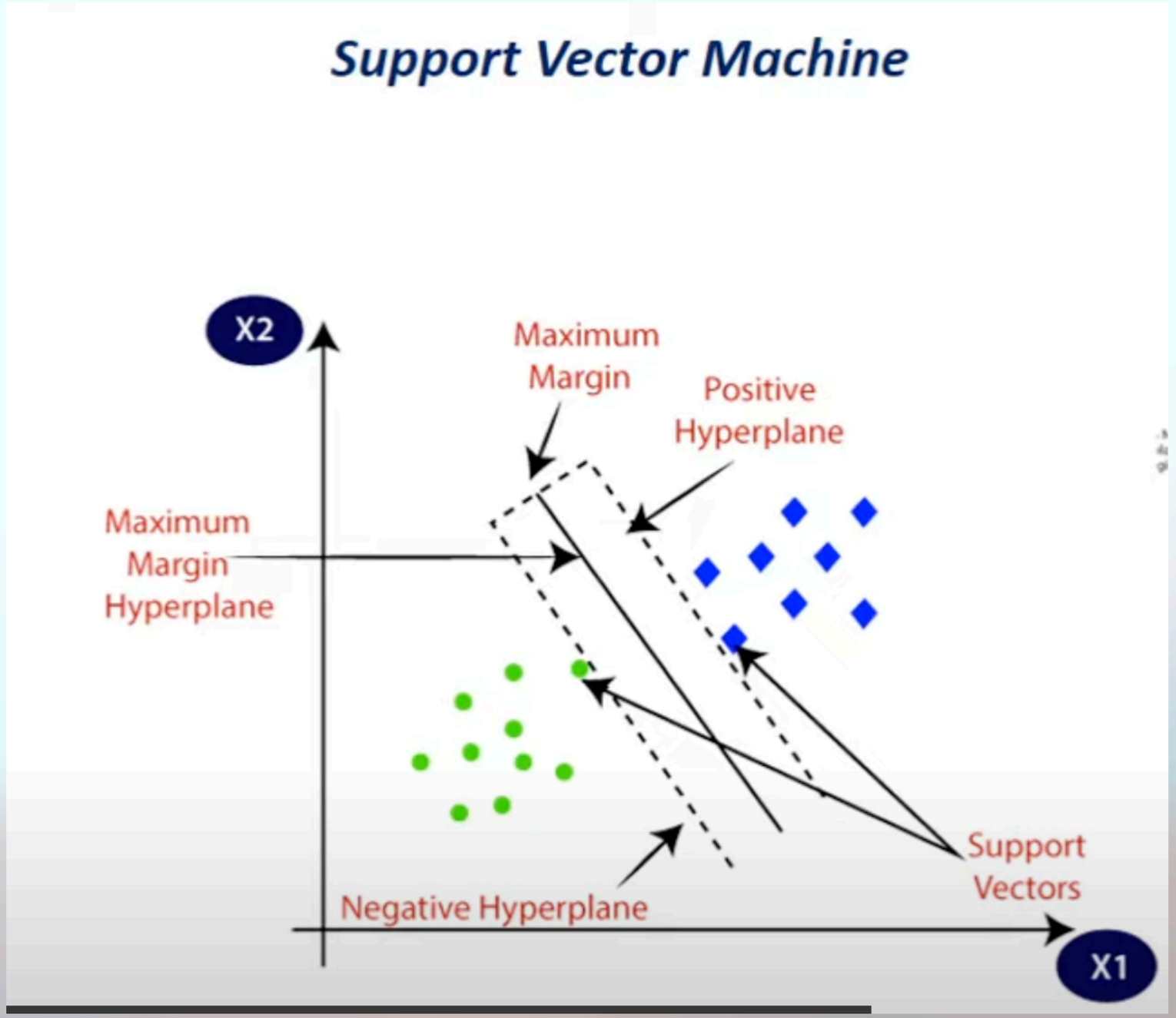
Supervised learning is a type of machine learning where an algorithm is trained using labeled data.



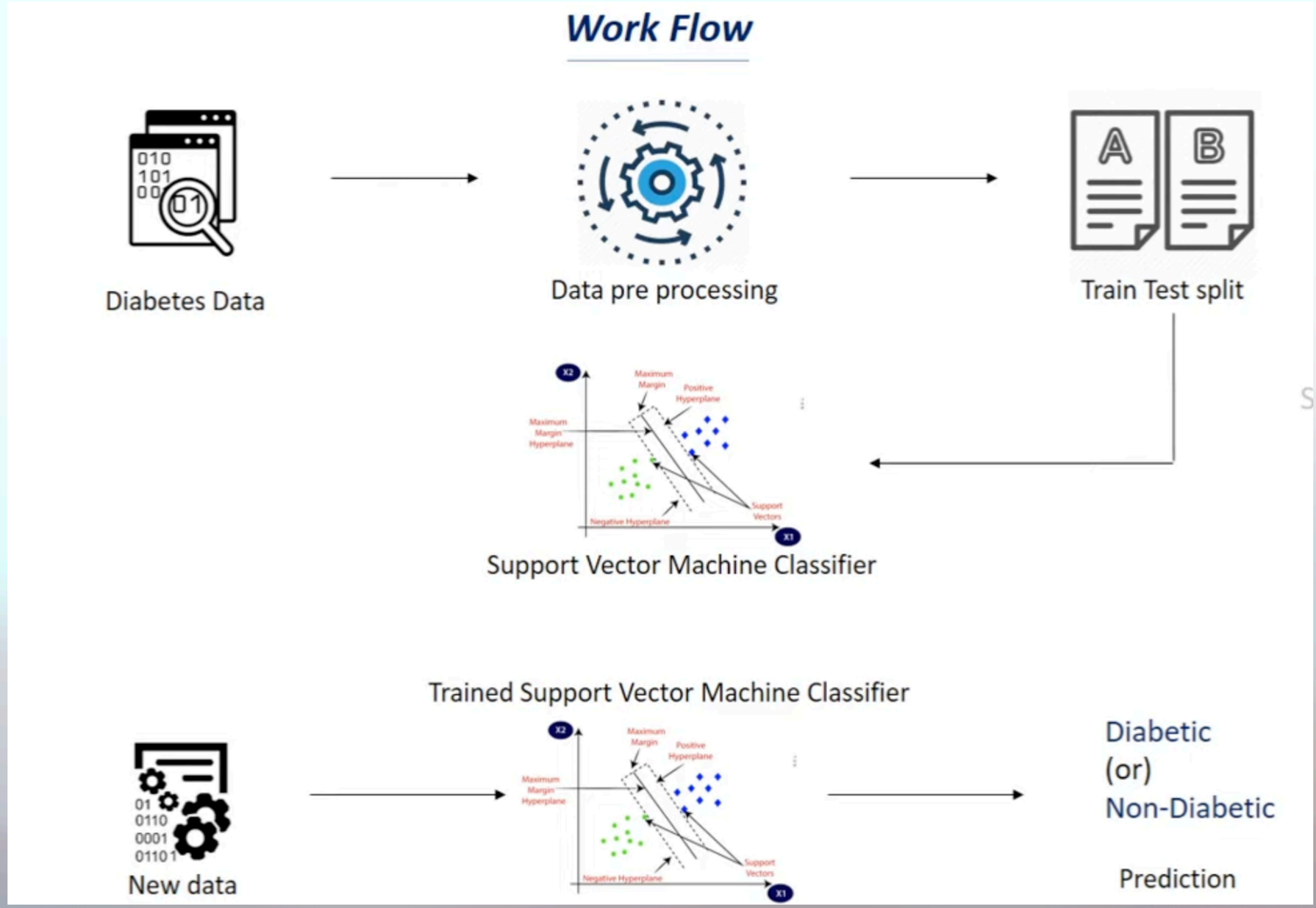
# Support Vector Machine

- Objective: Find the hyperplane that best separates data points into classes
- Hyperplane: Boundary separating data; maximizes margin between classes
- Support Vectors: Data points closest to the hyperplane, influencing its position
- Kernel Trick: Technique for transforming data into higher dimensions (e.g., Linear, Polynomial, RBF)
- Regularization Parameter (C): Controls margin vs. misclassification trade-off
- Advantages: Effective in high-dimensional spaces, robust to overfitting
- Limitations: Computational complexity, sensitive to noise

# Support Vector Machine



# Work Flow


Work Flow
Diabetes Data
Data pre processing
Train Test split
Maximum Margin
Positive Hyperplane
Maximum Margin Hyperplane
Support Vectors
Negative Hyperplane
X2
X1
Support Vector Machine Classifier
Trained Support Vector Machine Classifier
New data
Diabetic
(or)
Non-Diabetic
Prediction

# Any Query ?

# Thank You