

# **Revolutionizing Diabetes Detection with Machine Learning**

*An Innovative Approach to Early Prediction*

### Diabetes

- Total:** 38.4 million people have diabetes (11.6% of the US population)
- Diagnosed:** 29.7 million people, including 29.4 million adults
- Undiagnosed:** 8.7 million people (22.8% of adults are undiagnosed)

### Prediabetes

- Total:** 97.6 million people aged 18 years or older have prediabetes (38.0% of the adult US population)
- 65 years or older:** 27.2 million people aged 65 years or older (48.8%) have prediabetes

### **Deaths**

Diabetes was the seventh leading cause of death in the United States in 2019 based on the 87,647 death certificates in which diabetes was listed as the underlying cause of death. In 2019, diabetes was mentioned as a cause of death in a total of 282,801 certificates.

# The Diabetes Dilemma

- Global Burden:** Diabetes, a chronic metabolic disorder, afflicts millions worldwide, posing a substantial health challenge.
- Traditional Detection Challenges:** Current methods involve invasive procedures, are cost-intensive, and lack accessibility.
- Rising Prevalence:** WHO estimates predict a surge to 642 million diabetes cases by 2040.
- Burden on Healthcare Systems:** Managing diabetes strains healthcare resources and economies globally.

## **Need for Innovation:**

- Timely Detection is Key:** Early diagnosis allows for effective interventions, lifestyle adjustments, and reduced complications.
- Inaccessible Methods:** Traditional detection methods are often impractical, particularly in resource-constrained regions.

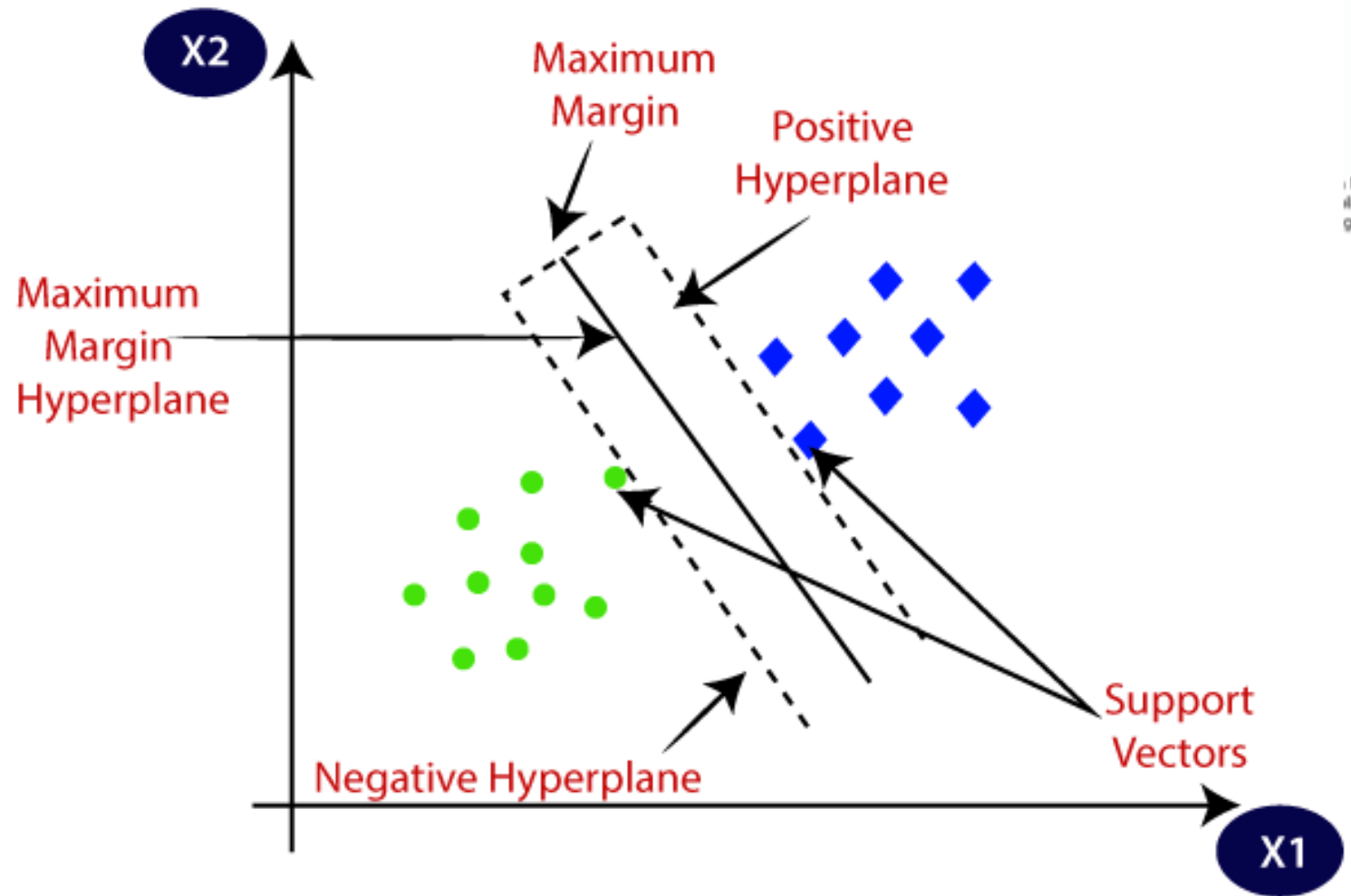


# Our Mission

The background of the slide is a futuristic, high-tech medical interface. It features a large, glowing blue rectangular frame on the left and a smaller, similar frame on the right. Inside the larger frame, there is a DNA double helix structure at the top, a grid of various medical icons (like a heart, brain, and eye) below it, and a person in a white lab coat standing in the center. The right frame shows a human silhouette with internal organs highlighted, a world map, and other data visualizations. The overall aesthetic is clean, modern, and scientific, with a blue and white color palette and glowing light effects.

***Develop a machine learning model for early diabetes prediction***

# Harnessing Support Vector Machines (SVM)



# Workflow



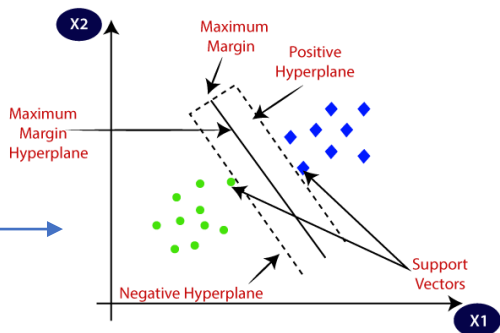
Diabetes data



Data pre processing



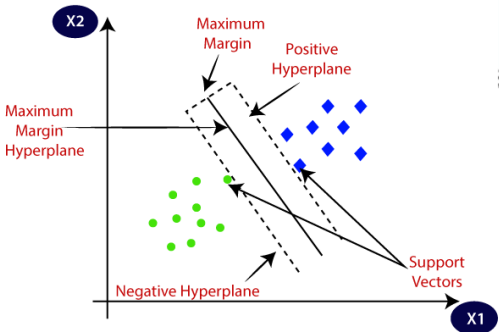
Train Test split



Support vector machine classifier



New data



Trained Support vector machine



**Diabetic  
Or  
Non-diabetic**

Prediction

# Diabetes Prediction Web App

Number of Pregnancies

Blood Glucose Level

Blood Pressure value

Skin Thickness value

Insulin Level

BMI value

Diabetes Pedigree Function value

Age

Result

$\{1, 85, 66, 29, 0, 26.6, 0.351, 31\}$

The person is not diabetic

$\{6, 148, 72, 35, 0, 33.6, 0.627, 50\}$

The person is diabetic



Q&A

