

Skin cancer binary classification

UNIT-26 MACHINE LEARNING

REG NO

P966076

Presented By

VYSHNAV ROOP CK

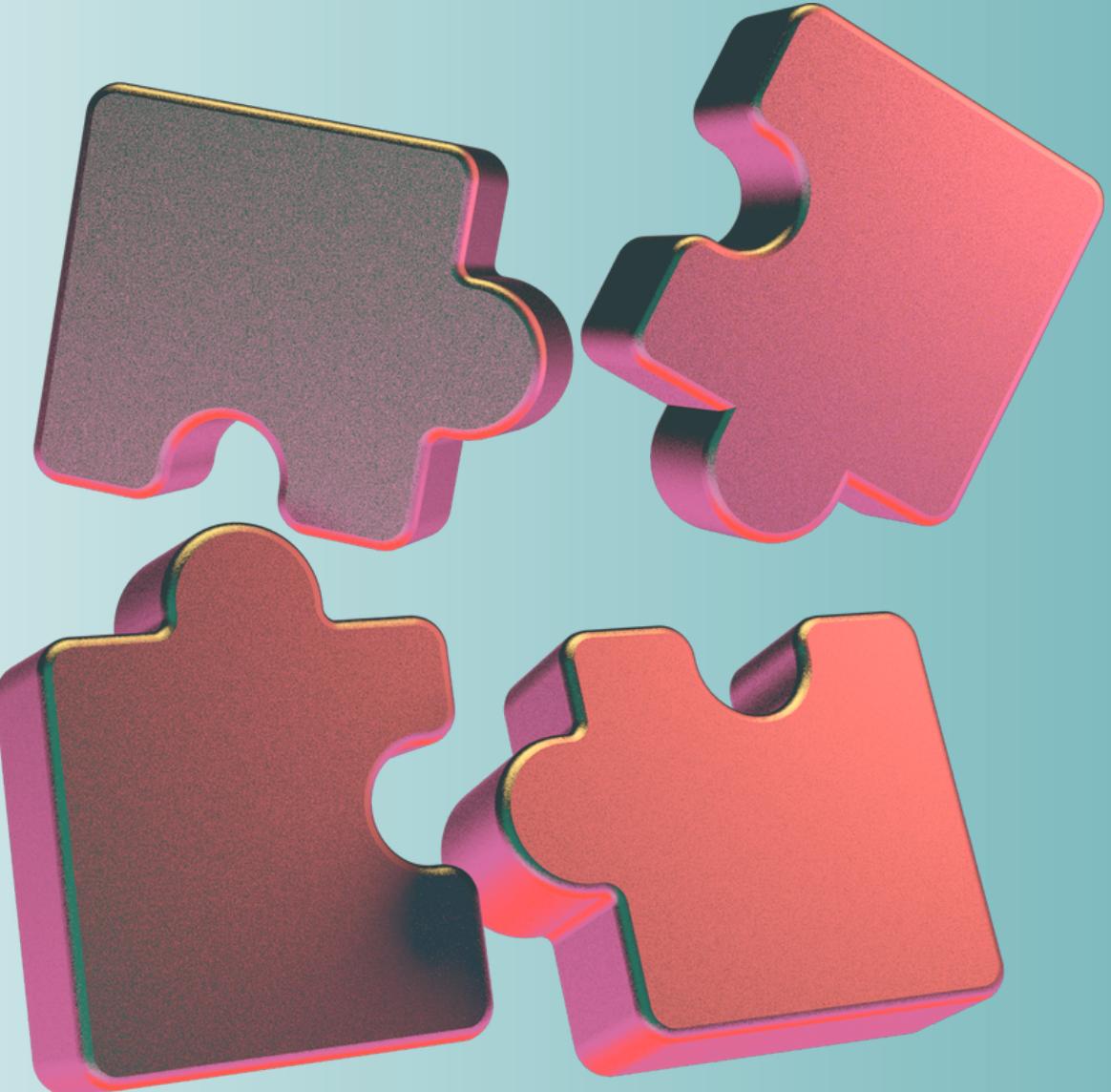


TABLE OF CONTENTS

| | | | |
|----------|-----------------------|----------|-----------------|
| 1 | INTRODUCTION | 5 | WHAT I SELECTED |
| 2 | PROBLEM STATEMENT | 6 | TOOLS USED |
| 3 | TAXONOMY | 7 | DEMONSTRATION |
| 4 | TYPES OF ML ALGORITHM | | |

INTRODUCTION

- Skin cancer binary classification involves categorizing a skin lesion as either cancerous or non-cancerous based on its characteristics.
- This process is binary because it involves classifying the lesion into one of two categories.
- Machine learning is commonly used for skin cancer binary classification.
- Machine learning models are trained using a set of input features and their corresponding output labels.



PROBLEM STATEMENT:

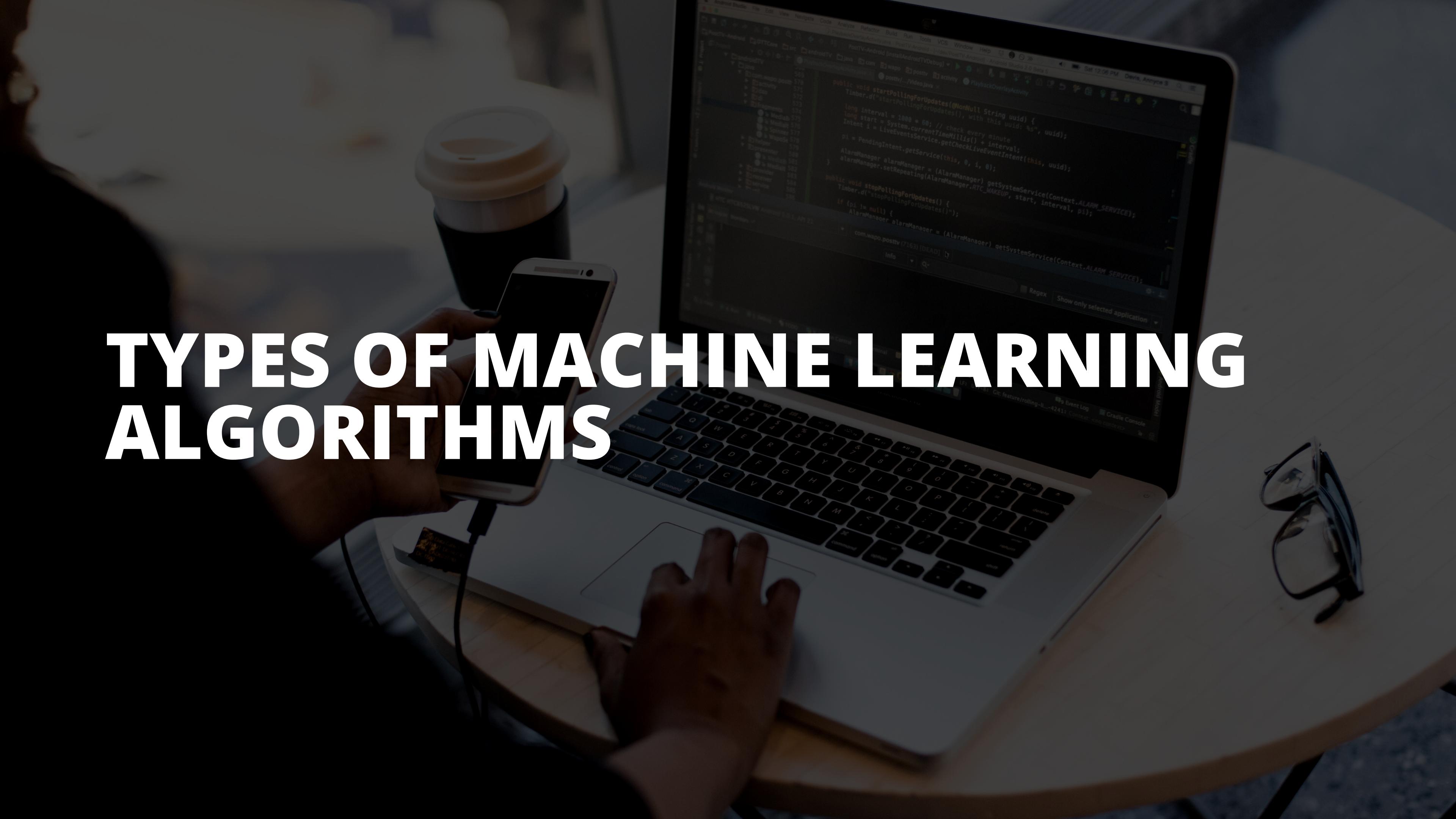
- Skin cancer is a serious and potentially life-threatening disease that affects millions of people worldwide.
- Early detection and accurate diagnosis are critical to improving the chances of successful treatment and reducing the risk of complications.
- Skin cancer diagnosis can be challenging even for experienced dermatologists, and misdiagnosis can lead to unnecessary treatments and potentially harmful outcomes.



Taxonomy

1. Taxonomy is the practice and science of classification.
- 2 In machine learning, taxonomy refers to the categorization of algorithms
 - . based on their characteristics and functionality.
- 3 Taxonomy helps in identifying which algorithm to use for a particular problem and also helps in understanding the relationships between different algorithms.
- 4 Understanding taxonomy is essential for researchers and practitioners to
 - . make informed decisions about algorithm selection and model development.

TYPES OF MACHINE LEARNING ALGORITHMS



Supervised Learning

To explain the concept of supervised learning and its applications in real-world scenarios

- **Definition**

Supervised learning is a type of machine learning where the algorithm learns to map inputs to outputs based on labeled examples provided in the training data.

- **Applications**

Supervised learning can be used in a variety of real-world scenarios such as image recognition, speech recognition, fraud detection, and predictive modeling.

Unsupervised Learning

To explain the concept of unsupervised learning and its applications in real-world scenarios

■ Definition

Unsupervised learning is a type of machine learning where the model is trained on a dataset without any labeled outcomes or target variable.

■ Clustering

One of the most common applications of unsupervised learning is clustering, which involves identifying groups or clusters within a dataset based on similarities between data points.

■ Anomaly detection

Another application of unsupervised learning is anomaly detection, which involves identifying data points that are significantly different from the rest of the dataset.

■ Dimensionality reduction

Unsupervised learning can also be used for dimensionality reduction, which involves reducing the number of features or variables in a dataset while retaining as much of the original information as possible.

■ Real-world scenarios

Examples of real-world scenarios where unsupervised learning can be used include customer segmentation for marketing, fraud detection in financial transactions, and image or speech recognition.

Reinforcement Learning

To explain the concept of reinforcement learning and its applications in real-world scenarios

■ Definition of Reinforcement Learning

Reinforcement Learning is a type of machine learning algorithm where an agent learns to behave in an environment, by performing certain actions and receiving rewards for those actions. The goal of the agent is to maximize the total reward it receives over a period of time.

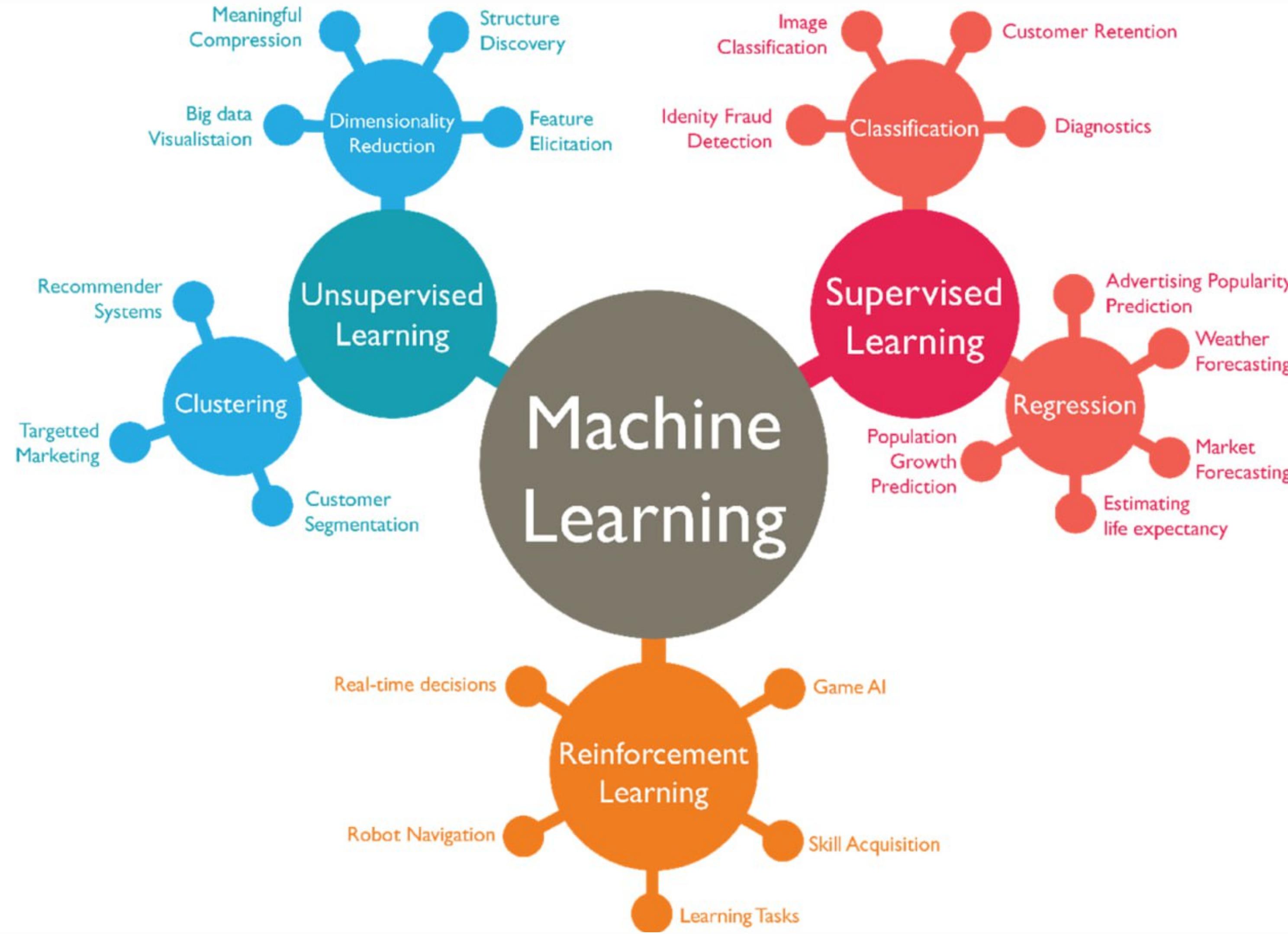
■ Applications of Reinforcement Learning

Reinforcement Learning has a wide range of applications in real-world scenarios, including robotics, game playing, recommendation systems, and autonomous vehicles. It can be used to train agents to make optimal decisions in complex environments, where traditional rule-based systems may not be effective.

■ Real-world Examples of Reinforcement Learning

Examples of Reinforcement Learning in real-world scenarios include training robots to navigate through complex environments, teaching autonomous vehicles to drive safely on roads, and developing game-playing agents that can beat human experts in complex games like Go and Chess.

Machine Learning



Supervised Learning in Healthcare



Exploring its Potential in Skin Cancer Detection and Diagnosis

- ▶ **Supervised Learning with Skin Cancer Binary Dataset**
Supervised learning is a machine learning technique used with skin cancer binary datasets to train a model to classify skin lesions as cancerous or non-cancerous based on labeled data.
- ▶ **Comparison with Other Methods**
unsupervised learning does not use labeled data to train the model. It is useful when there is a large amount of unstructured data, but it may not be as effective as supervised learning in detecting skin cancer due to the lack of labeled data.
- ▶ **Importance of Data Quality in Supervised Learning**
High-quality data is critical for achieving accurate and reliable results in supervised learning for skin cancer detection applications. This is because training data is used to teach the machine learning model to recognize patterns that differentiate cancerous from non-cancerous skin lesions. Inaccurate or incomplete data can lead to biased or incorrect model predictions, potentially leading to misdiagnosis and harm to patients.



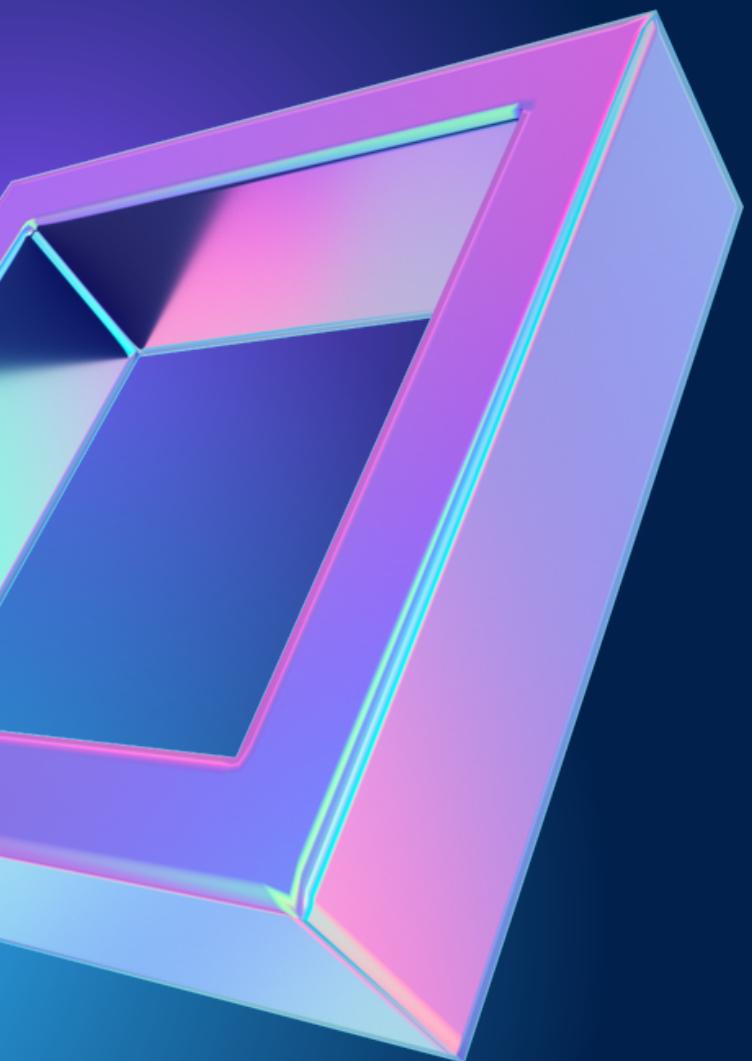
TOOLS USED



- ▶ **PYTHON**
USED TO CREATE THE CODE
 - ▶ **WEKA TOOL**
HELPED TO ANALYZE THE DATA AND HELP ME TRAIN
 - ▶ **JUPITER NOTEBOOK**
HELPED ME ORGANIZE THE DATA SET
- • •
• • •
• • •
• • •

DEMONSTRATION





Thank You