The Applications of ML in Real World Problems
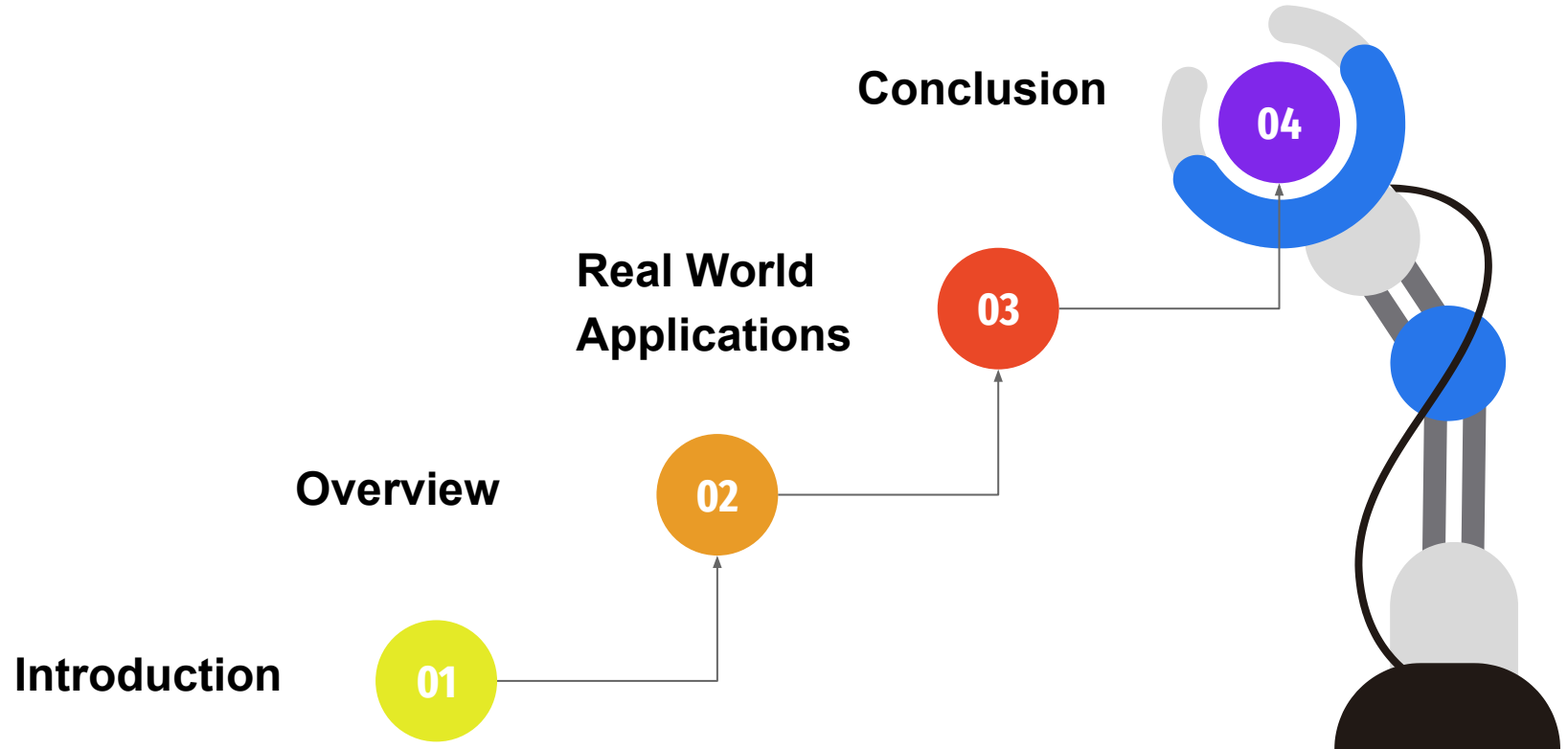
Machine Learning (CSE 465)

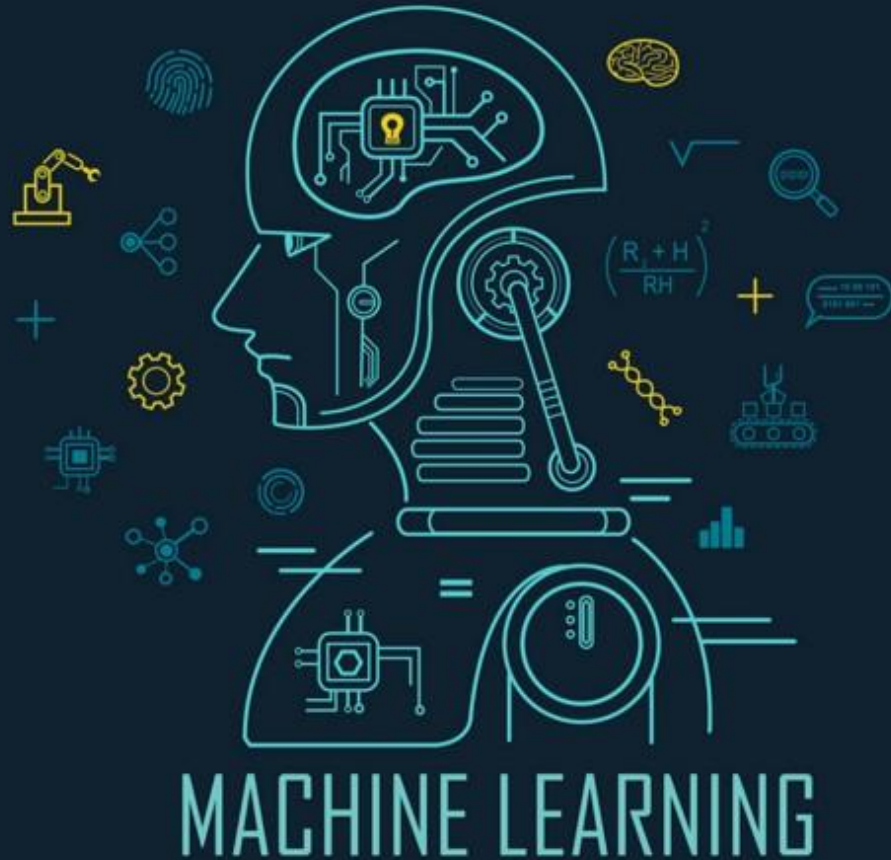| Presented to |
| --- |
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Intake: 39(2), Dept. of CSE, BUBT	

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Contents

Introduction

MACHINE LEARNING

Leading Applications of ML in 2021

33%
Business analytics

25%
Security

16%
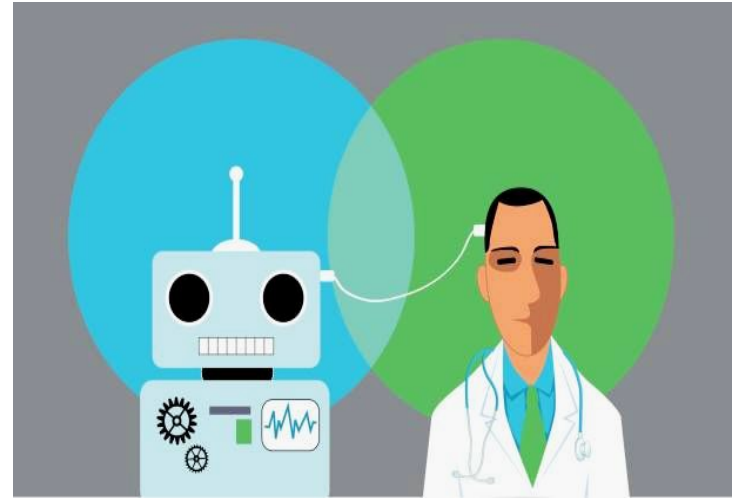Sales and marketing

10%
Customer service
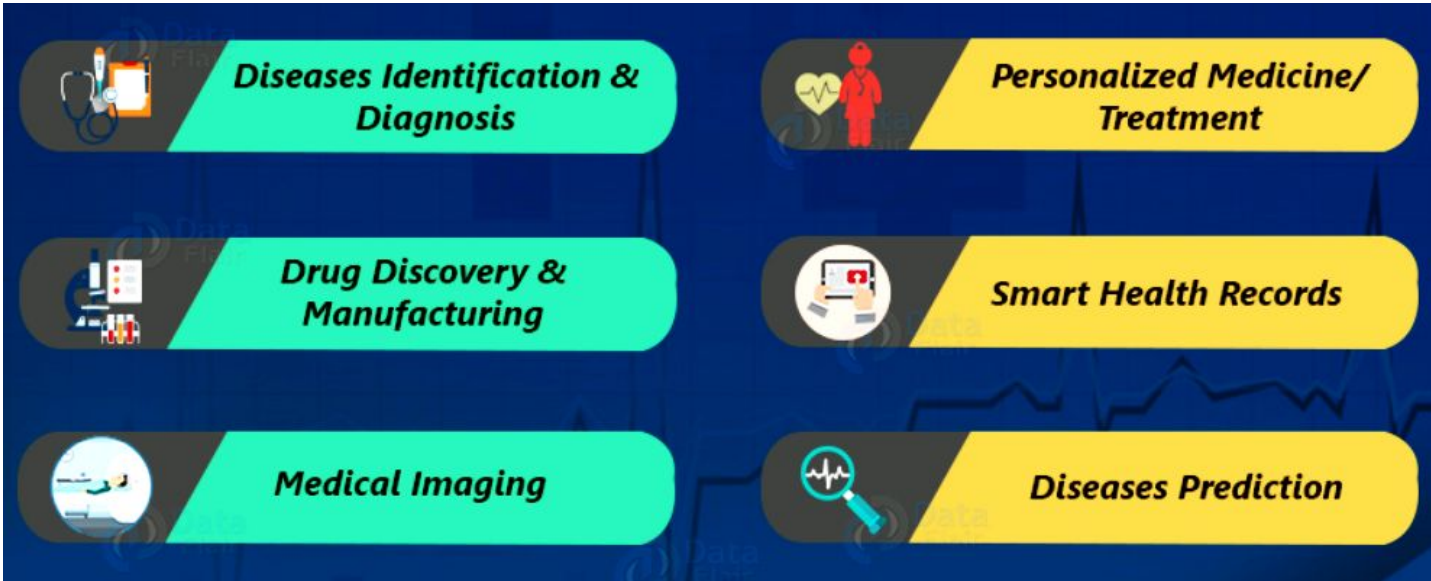
16%
Other

Source: Statista
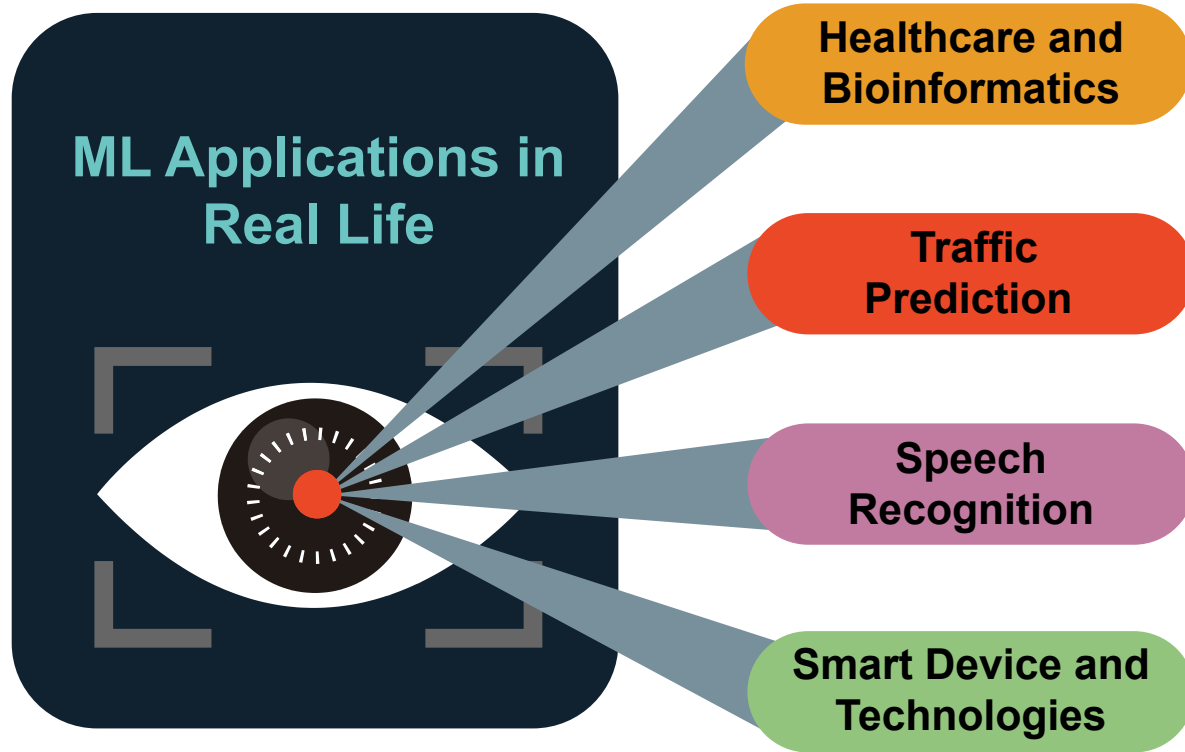
Healthcare and Bioinformatics

Machine learning in healthcare and bioinformatics is becoming more widely used and is helping patients and clinicians by overcoming industry challenges and creating a more unified system to improve work processes.

Source: techcrunch.com

Real World Applications

Source: ddata-flair.training

Traffic Prediction

Traffic prediction means forecasting the volume and density of traffic flow, usually for the purpose of managing vehicle movement, reducing congestion, and generating the optimal (least time- or energy-consuming) route.

Who needs it, and why is it important?

Traffic prediction is mainly important for two groups of organisations **:**

National/Local Authorities: In the last ten to twenty years, many cities adopted intelligent transportation systems (ITS) .These systems use current traffic information as well as generated predictions to improve transport efficiency and safety by informing users of current road conditions.

Logistics Companies: Another area of implementation is the logistics industry. Transportation, delivery, field service, and other businesses have to accurately schedule their operations and create the most efficient routes.
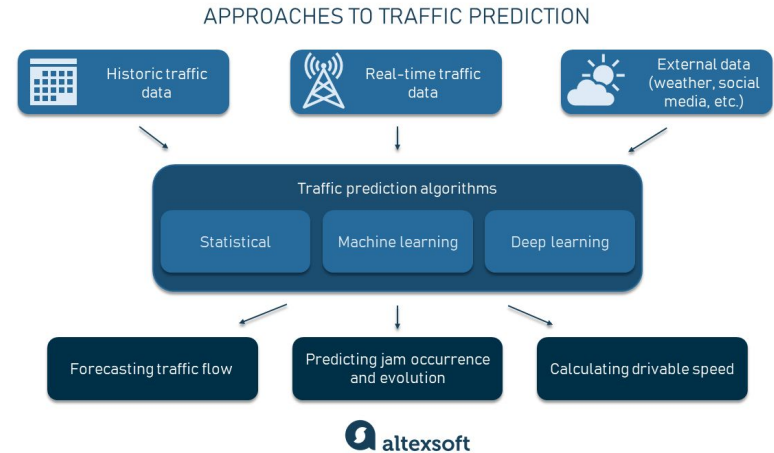
How to implement traffic prediction

Let's take a look at different approaches to this task :

Statistical approach : They are usually easier, faster, and cheaper to implement than machine learning ones.

Machine learning approach : Numerous studies have been conducted on the application of ML algorithms to forecast road traffic.

Deep learning approach : Deep learning (DL) methods have proved highly effective comparison other techniques.

APPROACHES TO TRAFFIC PREDICTION

Historic traffic data

Real-time traffic data

External data (weather, social media, etc.)

Traffic prediction algorithms

Statistical   Machine learning   Deep learning

Forecasting traffic flow

Predicting jam occurrence and evolution

Calculating drivable speed

altexsoft

can't process multivariate data

Speech Recognition

While using Google, we get an option of "Search by voice", it comes under speech Recognition, and it's a popular application of machine learning. Speech recognition is a process of converting voice instructions into text, and it is also known as "Speech to text", or "Computer speech recognition". At present, machine learning algorithms of are widely used by various application of Speech recognition.
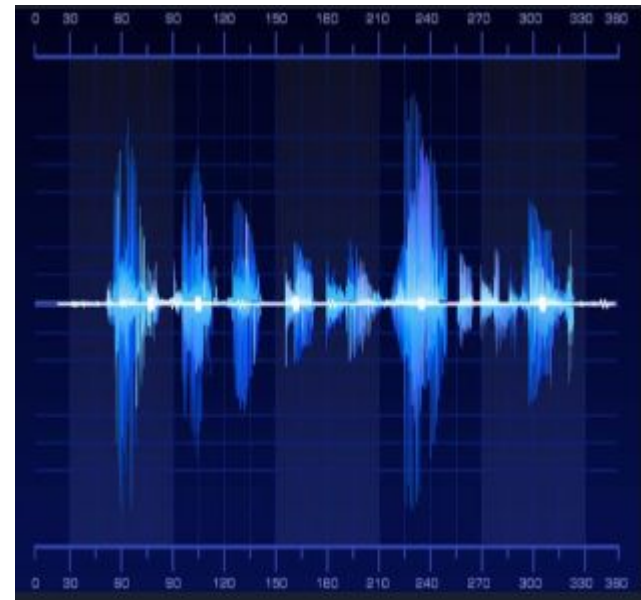
Speech Recognition Example

Siri

Cortana

Alexa

Google Assistant

Smart Device and Technologies

Machine Learning is a promising technology to extract accurate and valuable information from smart devices and technologies. IT can also enable the smart devices to learn without use of explicitly programming.
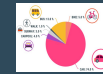
Smart Device and Technologies Cont.

Online Support using Chatbots

Commute Predictions

Video Surveillance

Autonomous Cars

Virtual Assistant

Conclusion

These days, machine learning techniques are being widely used to solve real-world applications. Research in ML has been vigorous and fruitful, and we can look forward to a continuation of good work in this area.

Reference

1. **Machine Learning and Real-World Applications - slideshare**
2. **Top 10 Real-World Machine Learning Applications**
3. **Machine Learning - GeeksforGeeks**
4. **Machine Learning: Algorithms, Real-World Applications and Research Directions | SpringerLink**
5. **AI and ML use case frequency 2021 | Statista**

Thank You!