**Experiment 1**

**AIM :** Case study on AI application

**THEORY :**

Artificial Intelligence (AI) is transforming the way we live, work, and interact with the world. From healthcare to transportation, retail to finance, AI is being used to streamline operations, enhance customer experience, and improve overall business outcomes. Here are some examples of how AI is being used in five sectors:

1 . Healthcare:

* AI is revolutionizing healthcare by improving patient outcomes, reducing costs, and enhancing patient experiences. Some of the ways AI is being used in healthcare include:
* Diagnosis and treatment: AI is being used to analyze large amounts of medical data to assist doctors in making accurate diagnoses and developing personalized treatment plans. AI is also being used to develop algorithms to identify patterns in medical imaging, such as X-rays and MRIs, to help doctors diagnose diseases more accurately and quickly.
* Medical research: AI is being used to analyze large datasets to identify new treatments and potential drug targets. Machine learning algorithms can analyze large amounts of medical data to identify patterns and relationships that might be missed by human researchers.
* Medical imaging: AI is being used to improve medical imaging, making it faster and more accurate. For example, AI algorithms can identify early signs of diseases like cancer from X-rays and CT scans.

2 . Finance:

* AI is being used in the financial sector to improve customer experiences, reduce costs, and mitigate risks. Some examples of how AI is being used in finance include:
* Fraud detection: AI is being used to detect fraudulent transactions and identify potential fraudulent activity. Machine learning algorithms can analyze large amounts of data to identify patterns and anomalies that might indicate fraud.
* Investment management: AI is being used to assist investment managers in making better investment decisions. Machine learning algorithms can analyze large amounts of financial data to identify trends and make predictions about market movements.
* Customer service: AI is being used to improve customer service in the financial sector. Chatbots and virtual assistants can answer customer inquiries and provide personalized assistance, reducing wait times and improving overall customer experiences.

3 . Transportation:

* AI is being used in the transportation sector to improve safety, efficiency, and sustainability. Some examples of how AI is being used in transportation include:
* Autonomous vehicles: AI is being used to develop self-driving cars and other autonomous vehicles. Machine learning algorithms can analyze sensor data to make real-time decisions about how the vehicle should behave.
* Traffic management: AI is being used to optimize traffic flow and reduce congestion. Machine learning algorithms can analyze real-time traffic data to identify bottlenecks and make recommendations for how to improve traffic flow.
* Predictive maintenance: AI is being used to identify potential maintenance issues before they become critical. Machine learning algorithms can analyze sensor data to identify patterns and trends that might indicate a problem.

4 . Retail:

* AI is being used in the retail sector to improve customer experiences, increase sales, and reduce costs. Some examples of how AI is being used in retail include:
* Personalization: AI is being used to provide personalized product recommendations and experiences. Machine learning algorithms can analyze customer data to identify their preferences and make tailored recommendations.
* Inventory management: AI is being used to optimize inventory management and reduce waste. Machine learning algorithms can analyze sales data to identify trends and make recommendations for how much inventory to order.
* Customer service: AI is being used to improve customer service in the retail sector. Chatbots and virtual assistants can answer customer inquiries and provide personalized assistance, reducing wait times and improving overall customer experiences.

5 . Manufacturing:

* AI is being used in the manufacturing sector to improve efficiency, reduce costs, and improve product quality. Some examples of how AI is being used in manufacturing include:
* Predictive maintenance: AI is being used to identify potential maintenance issues before they become critical. Machine learning algorithms can analyze sensor data to identify patterns and trends that might indicate a problem.
* Quality control: AI is being used to improve

The significant contributions of this work are as follows:

(i) A comprehensive survey of AI and IoT-based autonomous vehicles research works is carried out.

(ii) Safety standards and challenges for autonomous vehicles are discussed with currently available solutions.

(iii) Research and development challenges for AI and IoT-enabled autonomous vehicles are presented.

(iv) Tools and frameworks for autonomous vehicles used by researchers and organizations are

highlighted.

(v) Recent advancements in autonomous vehicles using cloud computing, machine learning, and deep learning are discussed as future directions for researchers and organizations.