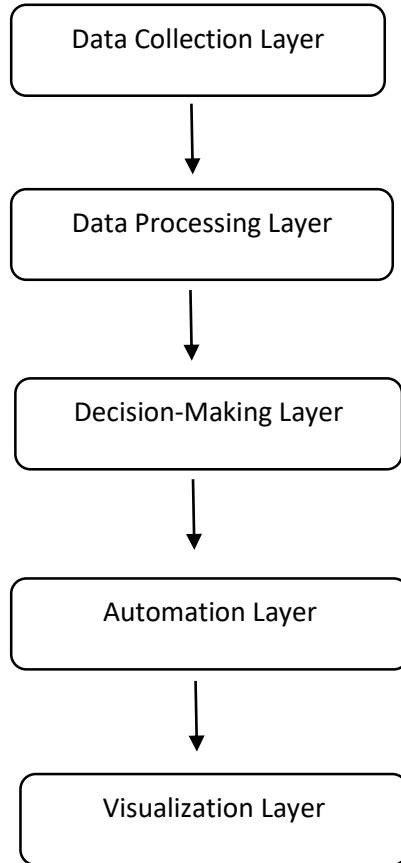


AI AND IOT TECHNOLOGY IN AUTOMOTIVE PARTS MANUFACTURING

System Architecture

The system architecture for **AI and IoT-based automotive parts manufacturing** consists of multiple interconnected components:



Module Description

The project consists of the following **four main modules**:

Data Collection Module:

- Gathers data from logistics, warehouses, and tracking systems.
- Data is transferred to a centralized database.

Data Processing & AI Model Module:

- Collected data is cleaned and preprocessed.
- Machine learning models analyze patterns in production.
- AI detects faults, anomalies, and predicts machine maintenance needs.

Decision Support & Optimization Module:

- AI recommends actions for improving production efficiency.
- Predictive analytics help reduce waste and defects.
- Real-time monitoring ensures smooth operations.

Power BI Visualization Module:

- Dashboards display factory performance, defective parts, and maintenance schedules.
- Graphs and charts provide insights into efficiency and cost savings.

Feasibility Study

1. Technical Feasibility

- AI models can effectively analyze manufacturing data for optimization.
- Power BI provides interactive dashboards for real-time insights.

2. Economic Feasibility

- Initial setup cost includes AI implementation, and Power BI tools.
- Long-term benefits include **reduced maintenance costs, minimized defects, and higher efficiency.**
- ROI improves as manufacturers optimize production with AI-driven decisions.

3. Operational Feasibility

- The system integrates smoothly with existing manufacturing workflows.
- Minimal manual intervention is required after implementation.
- Real-time monitoring helps production managers make informed decisions.

