

AI in Action - Mini Case Studies

Read each short case study below. As you read and **Underline the Inputs** (the information the system starts with). **Circle the Models/Algorithms** (the decision-making "brain" of the AI). **Highlight the Outputs** (the results or actions the AI produces).

Case Study 1: Self-Driving Car

A self-driving car collects information from its cameras, sensors, GPS, and radar as it moves through a busy street. These details are analyzed by a deep learning algorithm that has been trained on millions of examples of driving situations. The algorithm allows the car's model to predict whether a pedestrian might cross, whether a light will change, and how nearby cars may behave. Using this prediction, the car adjusts by braking, steering, or accelerating to keep passengers safe and follow traffic laws.



Case Study 2: Streaming Recommendations (Netflix)

When a user opens a streaming service, the system reviews their watch history, ratings, and even how long they watch certain shows before turning them off. This information is processed by collaborative filtering algorithms, which compare the user's viewing patterns with millions of others. The trained model uses those patterns to predict what new shows or movies the person might like. The service then displays a personalized list of recommended titles on the home screen.



Case Study 3: Medical Image Diagnosis

A hospital AI system is given digital images such as X-rays and MRIs. These images are analyzed by advanced computer vision algorithms that can detect subtle patterns in tissue, bone, or organs. The model, trained on thousands of past medical images and doctor-verified diagnoses, predicts whether a scan shows signs of conditions like pneumonia or tumors. The AI system provides a diagnostic suggestion to the doctor, who then reviews and confirms the result before treatment begins.

Reflection Questions - Compare the **inputs** across the three case studies. How are they similar, and how are they different?