Name _____

# AI in Action - Mini Case Studies Answer Key

**Case Study 1: Self-Driving Car**

A self-driving car collects **information from its cameras, sensors, GPS, and radar (I)** as it moves through a busy street. These details are analyzed by a **deep learning algorithm (M)** that has been trained on millions of examples of driving situations. The algorithm allows the **car's model (M)** 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 (O)** to keep passengers safe and follow traffic laws.

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**Case Study 2: Streaming Recommendations (Netflix)**

When a user opens a streaming service, the system reviews **their watch history, ratings, and viewing behavior (I)**. This information is processed by **collaborative filtering algorithms (M)**, which compare the user's viewing patterns with millions of others. The **trained model (M)** uses those patterns to predict what new shows or movies the person might like. The service then **displays a personalized list of recommended titles (O)** on the home screen.

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**Case Study 3: Medical Image Diagnosis**

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

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**Reflection Question - Sample Responses**

**Inputs** differ: self-driving cars use sensors, Netflix uses user behavior, and medical AI uses images. They are similar because each provides raw data for the AI.