What is artificial intelligence?



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You ask: What is artificial intelligence? The short answer is that it is the general name for methods that let computers do tasks such as understanding language, recognizing images, making predictions, and solving problems. This book explains that answer step by step, starting from zero. You will see what these methods are and how they work.



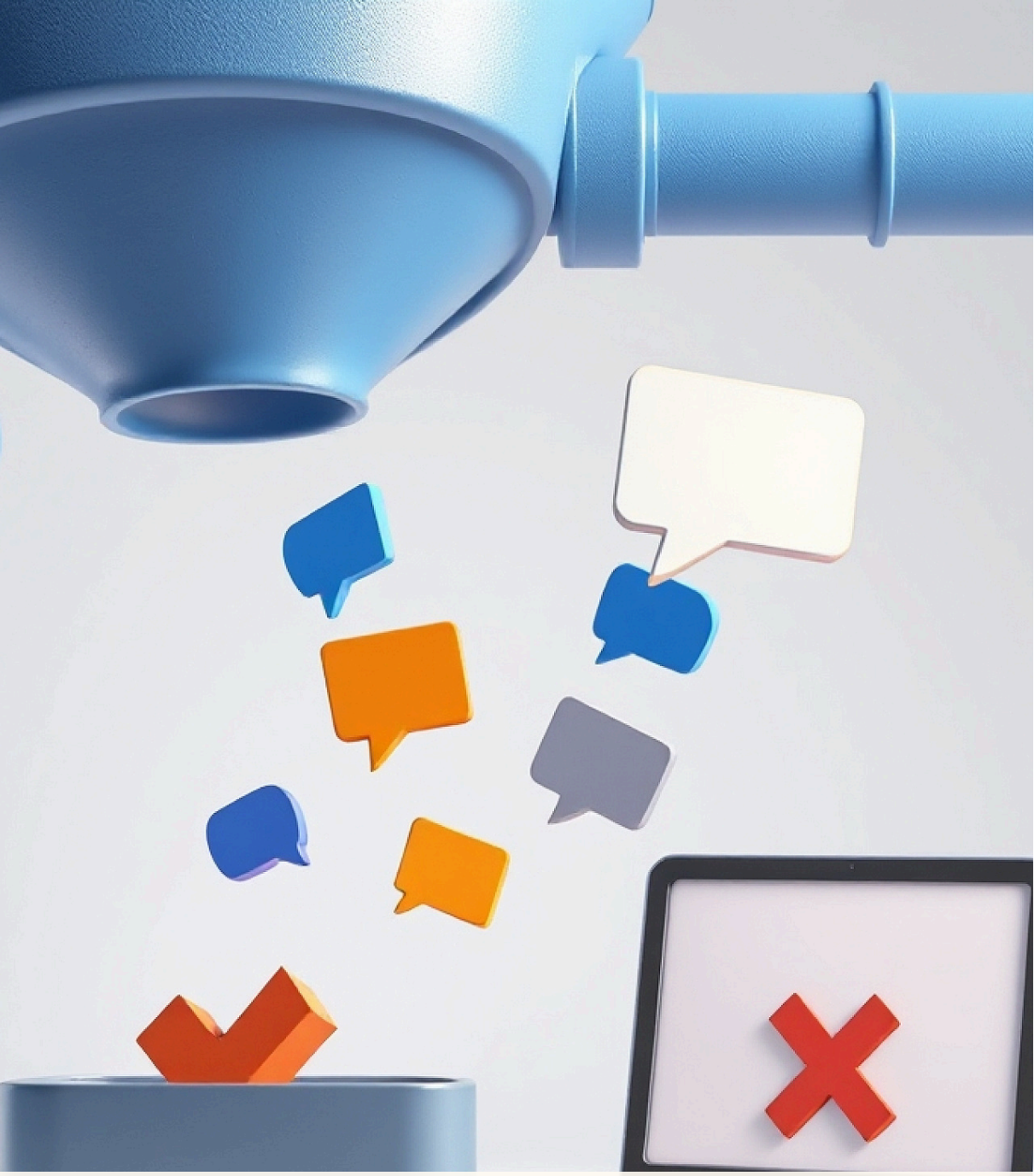
A computer does nothing on its own; it follows instructions given by people. These instructions tell it what to do, step by step. This is the starting point for understanding any computer task, including artificial intelligence. Without instructions, a computer stays idle. People write the instructions, and the computer carries them out exactly.



Think of everyday tasks that normally need human thinking: reading a sentence, recognizing a face in a photo, guessing tomorrow's weather, or solving a puzzle. These are the kinds of tasks that artificial intelligence methods aim to handle. You already know these tasks from daily life. Now you will see how computers can be made to do them.



Artificial intelligence is not one single program. It is a general name for many different methods. Each method is built to handle a particular kind of task, like language or images. So when you hear about AI, it refers to a whole family of techniques, not just one thing. This book introduces several of them.



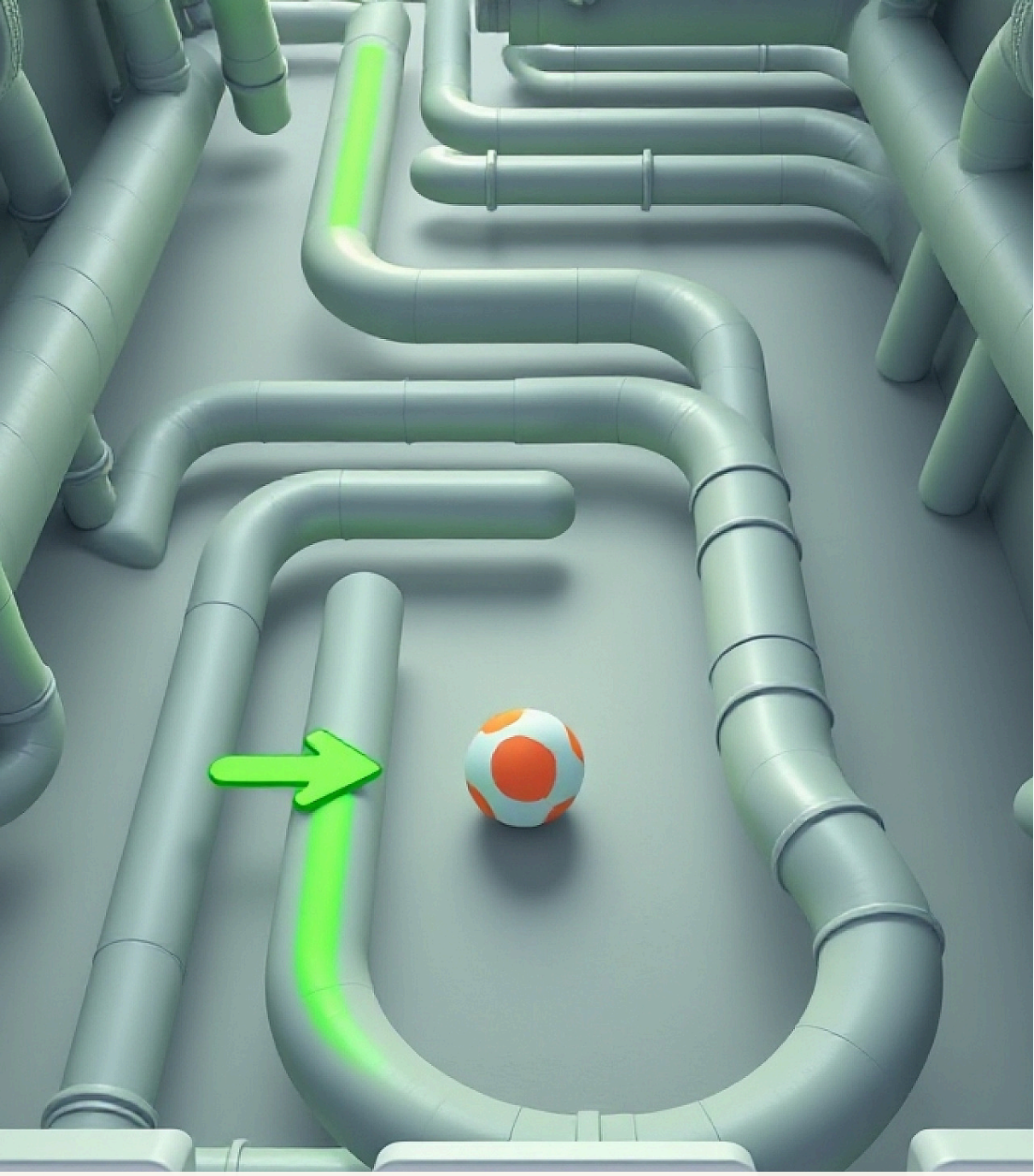
One example task is language processing: a computer working with human language. It might read text or answer a written question. For instance, a computer can scan a document and pick out the main topic. Language processing is one of the tasks covered by the general name artificial intelligence. It helps computers deal with words and sentences.



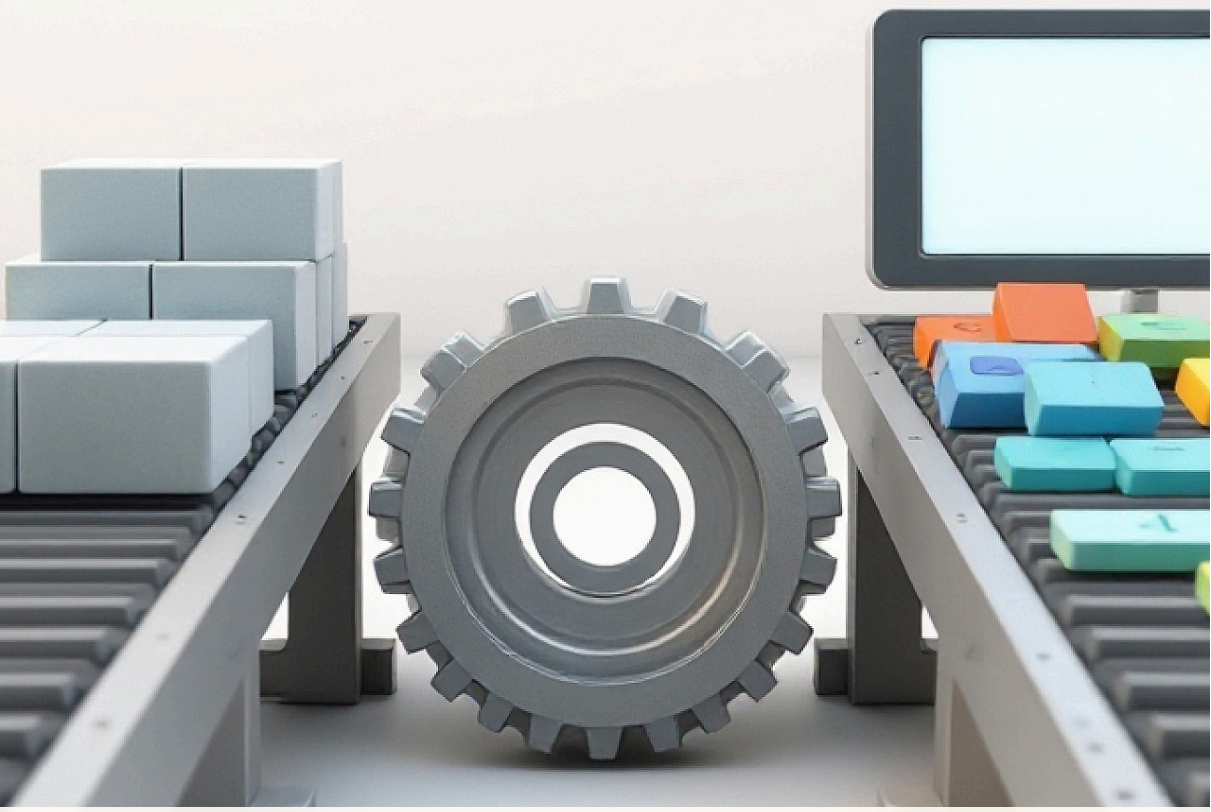
Another example task is image recognition: a computer looks at a picture and identifies what is in it. For example, it can spot a cat in a photo by analyzing the shapes and colors. This shows that AI methods can work with images, not only words. Image recognition is used in many applications, from photo tagging to medical scans.



Making predictions is another task in the AI family. A computer uses information it has to guess something not yet known. For instance, it can predict whether it will rain tomorrow based on past weather data. The computer does not know the future, but it finds patterns that help make a good guess. This is a common use of AI methods.



Problem solving means a computer works through a problem step by step to reach a solution. For example, it can find the shortest route on a map by considering different paths. Problem solving is one more task that AI methods can handle. It involves searching through options and choosing the best one. Many AI systems are designed for this.



AI methods come in two broad styles. Some work with rules written by people. Others learn from a large number of examples. Both styles appear in the tasks you just saw. For instance, a language system might use rules, while an image system might learn from examples. Understanding these two styles helps you see how AI works.



A rule-based system follows instructions written by a person. For example: if the message contains the word 'free', mark it as spam. A person writes the rules, and the computer applies them exactly. The computer does not learn or change the rules on its own. It just checks each message against the rules and acts accordingly.



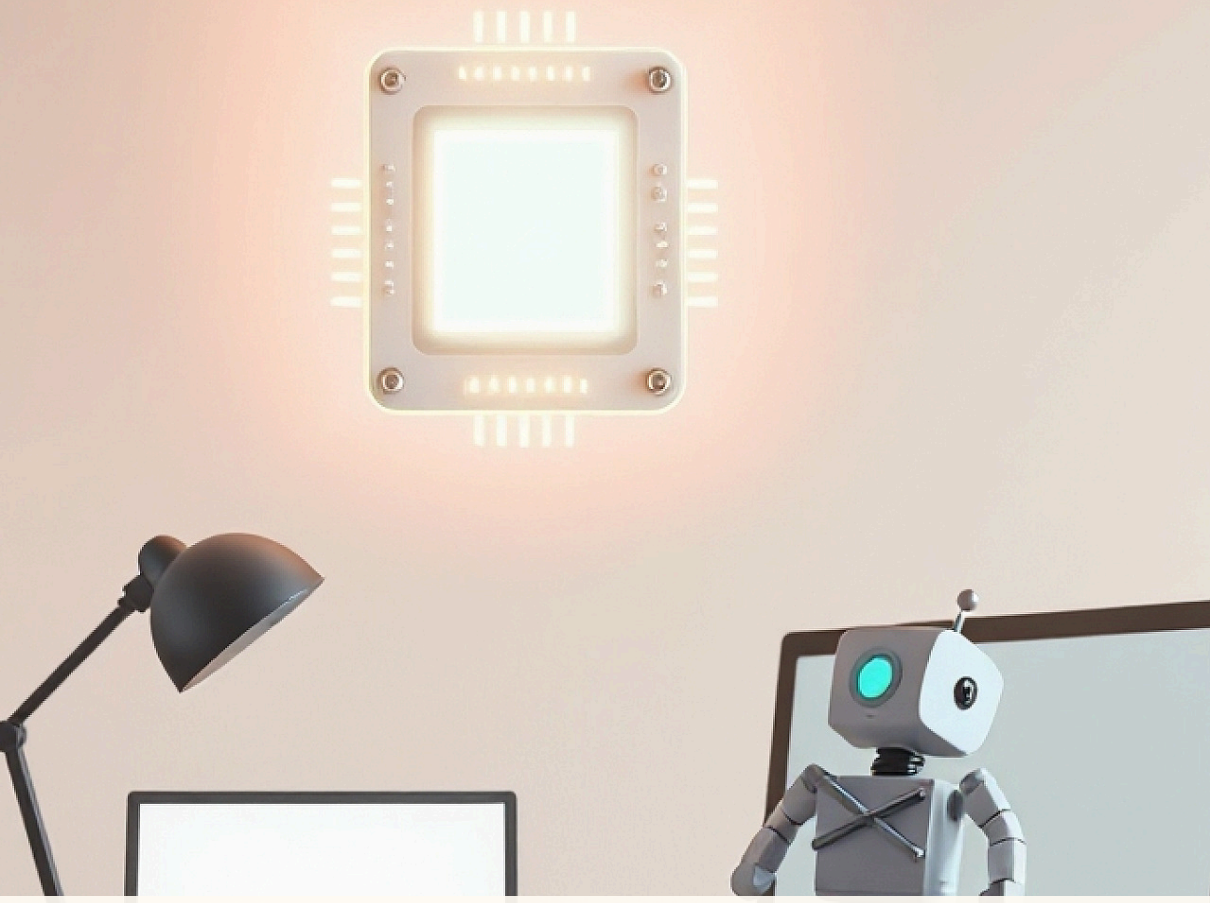
A learning system is shown many example messages, some wanted and some unwanted. It finds patterns in them itself. Instead of being given rules, it learns from the examples. For instance, it might notice that messages with certain words are often unwanted. After learning, it can classify new messages. This is how many modern AI systems work.



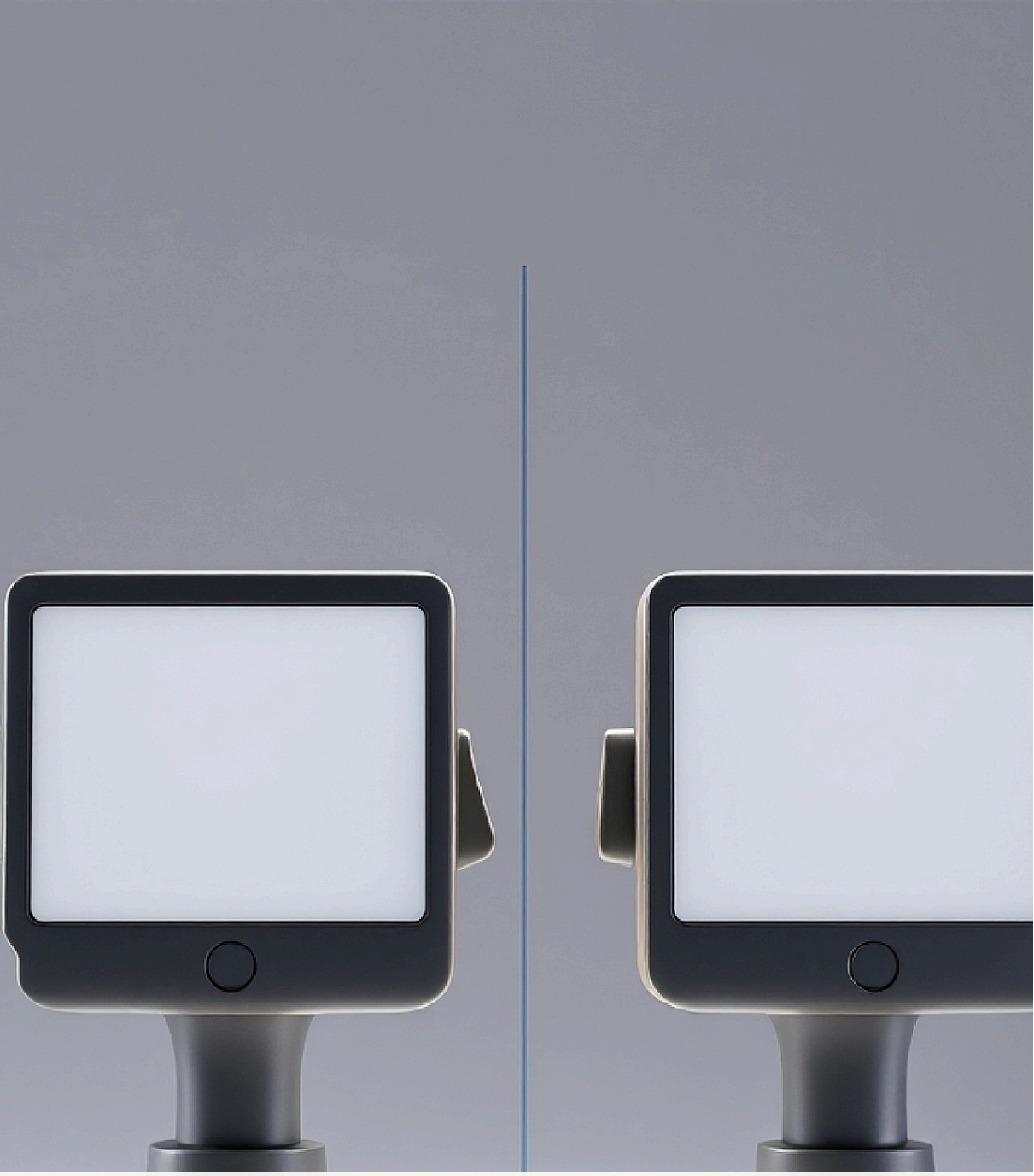
Follow the email example from start to finish. The system examines patterns in messages, such as frequent words or sender details. It uses these patterns to decide which emails to filter out. If it is rule-based, it checks against written rules. If it learns, it has been trained on many examples. Both styles can filter unwanted emails effectively.



A computer doing one task well, like filtering emails, does not mean it has all the thinking skills a human has. Success at one task is not the same as general human thinking. For example, a system that filters spam cannot also drive a car or write a poem. Each AI method is specialized for its task.



A common mistake is to think AI is a robot. AI is about methods and software, not about a machine that looks or moves like a person. A program on an ordinary computer can use AI methods. You do not need a physical robot to have artificial intelligence. The intelligence is in the instructions and data, not in a body.



Another common mistake is to think AI thinks like us. A computer following rules or finding patterns is not thinking the way a person does. It can succeed at a task without understanding it like a human. For example, it can filter spam without knowing what spam means. It just applies rules or patterns.



To sum up, artificial intelligence is the general name for methods that let computers do tasks like language processing, image recognition, predictions, and problem solving. These methods use either rules or learning from examples. Remember that doing one task well does not mean a computer has all human thinking skills. Each method is designed for a specific purpose.