Name: _____ Date: _____

The Spam Filter That Learned

Reading level 8 (4th grade) · 867 words

YOU WON A PRIZE! CLICK NOW! That message lands in your inbox, but you never see it. A machine read it first. It sent the message to the spam folder. No person checked your mail. So how did the machine know? The answer starts in 2002, with one man and a pile of junk mail.

The machine learned. People gave it a big pile of spam and a big pile of good mail. In 2002, a man named Paul Graham wrote about doing this. He used about 4,000 messages of each kind. The machine looked for clues that told the two piles apart.

Before that, he tried rules he wrote by hand. One rule caught any message with the word click. It caught about 8 in 10 spams. But it also trapped some good mail. When he made the rules harder, it trapped more. Good rules are hard to write.

So he let the machine find the clues. It counted each word in the spam pile and in the good pile. A word that showed up mostly in spam became a warning sign. Some signs were a surprise. One very good clue was ff0000. That is the web code for bright red. In his tests, the new filter missed fewer than 5 spams in 1,000.

This is what people mean by AI. AI is short for artificial intelligence. A 2026 survey by Common Sense Media told kids it is a computer that learns from a lot of information. It is not born knowing things. It gets better by studying examples.

Bigger machines learn in small steps. The machine makes a guess. Then it is told the right answer. If it was wrong, it changes itself a tiny bit. Then it tries again, over and over and over. Each round makes it a little better. This practice is called training.

Spam is only one use. The same idea can sort pictures. In 2012, a huge collection called ImageNet held over 15 million of them. People gave each picture a label. One team's machine learned from over a million. Then it named things in pictures it had never seen. It missed far less often than the next best.

Voices work the same way. A speech tool called Whisper learned from 680,000 hours of recorded talking, each hour paired with the words said. By our arithmetic, that is about 78 years without a break. No person could sit through that much. To a computer, sound is only a long list of numbers. So a machine can work through it all.

The videos you are shown come from a learning system too. In 2021, YouTube said its system has no recipe book, no fixed list of steps. It keeps learning from clicks, how long you watch, likes, dislikes and survey answers. Each choice you make adds one more small example.

A chatbot learned something different. It learned which words usually come next. It practiced on huge amounts of writing. Then it learned to add the next small piece of text, and the next. Google's machine learning course calls this a kind of autocomplete. It can write thousands of pieces in a row.

That is why a chatbot can sound sure and still be wrong. It builds text that sounds right. A guess can miss. A smooth answer can feel true when it is not. In Common Sense's 2026 survey, just 35 percent of kids knew that AI cannot tell true from false.

AI is good at some jobs and poor at others. Stanford's 2026 AI Index says one system won a gold medal at the International Mathematical Olympiad, a top math contest for students. It also says the top system reads a clock with hands right only about half the time. Experts call this the jagged frontier. Scores like these change often.

A machine can only learn from the examples it is given. If they leave some people out, its guesses can be worse for them. Common Sense warns that AI can repeat unfair ideas about groups of people. In 2019, US government testers checked 189 face programs. Most made different mistakes for different groups of people. Testing like this shows the gaps.

Who decides what a machine learns? In 1959, Arthur Samuel wrote about a checkers machine that learned to play better than the person who wrote it. Even so, a person had picked the game, the rules and the clues. People still choose what a machine learns from.

As of November 2026, Common Sense Media says most chatbot tools require users to be 13 or older. For kids 6 to 12, it says use one a little, beside a parent. It says not to type personal information, like names, addresses or photos. What you type can stay in the system's data. A good rule on top of that: keep your school's name out too.

Now go back to the spam folder. It holds the filter's guesses. In 2002, Paul Graham wrote that losing a real message is far worse than seeing some spam. So he tuned his filter to avoid hiding real mail. The prize message is in there. It is one more guess, made with no person looking.

Questions

1. How did the spam filter learn to spot spam?

A. It studied big piles of spam and good mail
B. A person read every message for it
C. It was born knowing the answer

2. Why can a chatbot sound sure and still be wrong?

A. It looks up every fact in a book
B. It builds text that sounds right, and a guess can miss
C. It only answers when it is certain

3. In this book, what does training mean?

A. Running a race
B. Turning the machine off
C. Guessing, being told the answer and adjusting, many times

4. What can happen when a machine's examples leave some people out?

A. It guesses perfectly anyway
B. Its guesses can be worse for those people
C. It stops working

5. Who chose the game, the rules and the clues for Samuel's checkers machine?

A. The machine itself
B. The checkers board
C. A person

6. What does the book say not to type into a chatbot?

A. Personal information, like names, addresses or photos
B. Questions about animals
C. The word hello

Words to know

spam: junk mail
filter: sorting program
training: practice phase
chatbot: talking program
label: name tag

Answer key: The Spam Filter That Learned

1. A. It studied big piles of spam and good mail
2. B. It builds text that sounds right, and a guess can miss
3. C. Guessing, being told the answer and adjusting, many times
4. B. Its guesses can be worse for those people
5. C. A person
6. A. Personal information, like names, addresses or photos