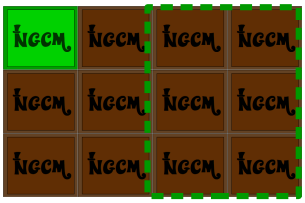
We can use computers to do lots of different jobs in science and engineering. Normally, an **expert** will take what they know about a subject, and write a **program** for the computer. The computer then works through the program, doing **calculations** much faster than any human could, and out pops the answer.

Machine Learning is a way of getting a computer to work out the best solution to a problem on its own – **without writing down a program**. Chomp uses what's called **reinforcement learning** to work out what is the best way to win. We only need to tell it the **rules of the game**.

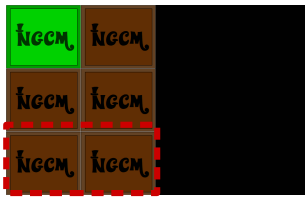
You can't look inside a real computer, so we've made a **working model** of the inside of a computer, so you can see what's happening.

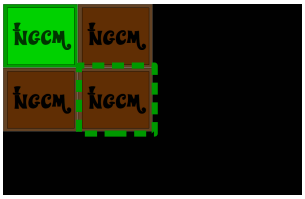
Human Player

Machine Player
...starts by taking a big bite...



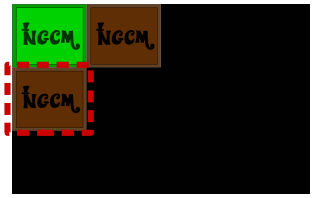
… chomps two squares...

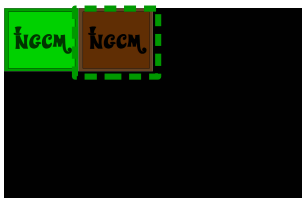




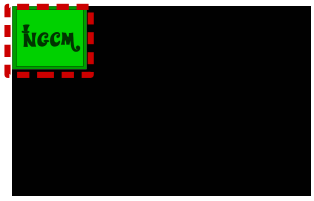
...takes a little nibble...

... chooses which square to eat…





...eats the last safe square...

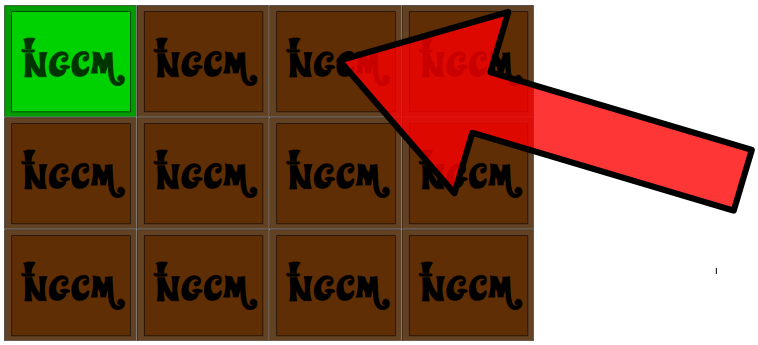


...HAS TO EAT THE POISON!

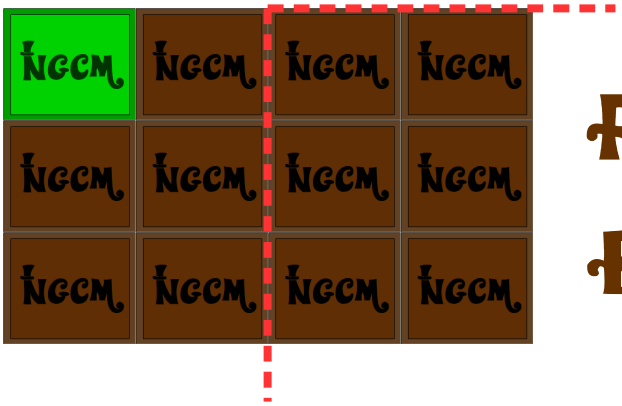
Well done Chomp!

In this game, the machine won, so we **reward** those winning moves, making them more likely in future. The losing moves made by the human are **penalised**, making them **less likely** for the machine to choose later.

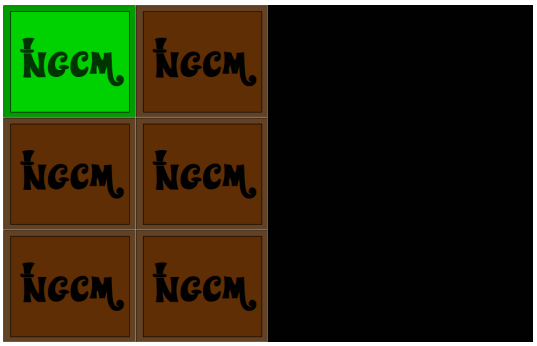
How to Chomp...



Pick a square

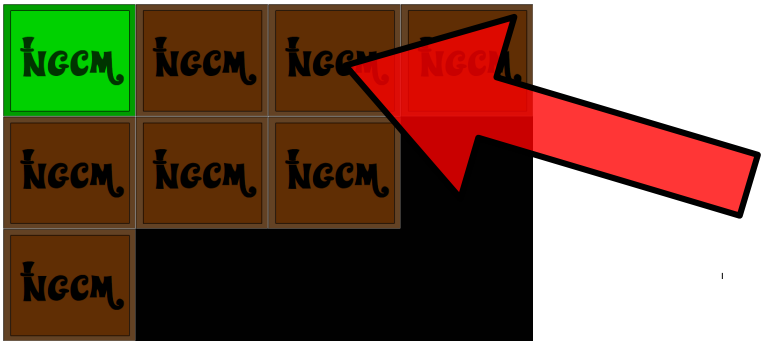


Remove squares below and right

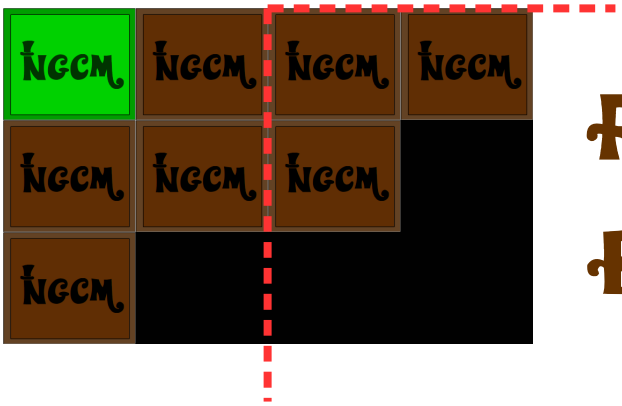


Don't eat the poisoned square!

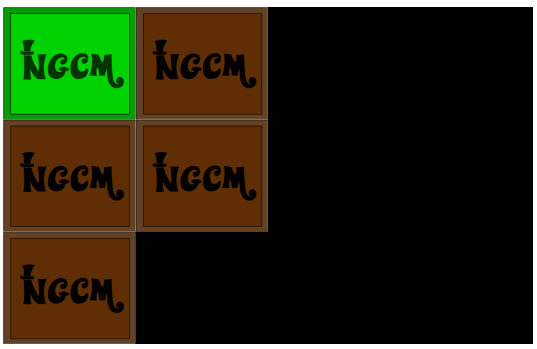
How to Chomp...



Pick a square



Remove squares below and right



Don't eat the poisoned square!