Week1 Paper Summary———Turning Machine
By Yi Zhou

Turning's paper raised a brand new concept——"Turning Machine" which is be considered to be the ancestor model of modern computer.

A Turning machine consists of a control unit, which at any step is in one of finitely many different states. Besides, it also consists of a tape divided into cells, which is infinite in both directions. The control units can move forth or back along the tape, and when it moves it can read or change the content in the cell. A Turning machine can be easily defined by using several five-tuples (s, x, s', x', d). The rule can be quite simple:

1. Enters the state s'
2. Writes the symbol x' in the current cell and eases x
3. Moves right one cell if d = R or moves left if d = L

Turning said in his paper that the number could be calculate by using such machine is computable and so is the sequence. Actually, a Turning machine can do everything a modern computer can do even it could be much more powerful because of its infinite memory.

From my respective, it's quite amazing for Turning machine to do so much things by just using several simple rules which even a child could understand. According to traditional Chinese philosophy, the greatest truths are the simplest. Although Turning might not read that, but his idea coincided with it. Although, such model could be quite complicated when it comes to some more complex functions , people invented multi-tapes Turning machine and use church calculus to solve them. Such solutions are all on the base of Turning machine.

However, there're still some things which Turning machine cannot calculate such as quantum computation, ''halting problem' and so on. I hope an another brand new computer model could come out and solve more problems. I look forward to seeing it.