Summarize of A.M. Turing’s article Computing Machinery and Intelligence

Qishun Yu, CM 2043

According to Turing’s interpretation, the question of machine thinking can be best answered by the “imitation game”. A test to evaluate machine’s intelligent by cross referencing machine’s responses with human’s responses. This test has the advantage of setting intellectual capacities as the only criteria thus eliminate physical interference. Many concerns are raised by Turing, for example, humans have poor performance imitating machine, what qualifies as a machine, the classification of digital computers, so on.

Turing then elaborates on each concern; he states that the best strategy for machine is to imitate natural response from human and no great effect of this kind. Only digital computers count as contestant and digital computers should include store, executive unit, control parts. Store provides space for information. Executive unit is the part carries calculation operations while control units is the part to follow constructed instructions, which later described as “program”.

A.M. Turing later explains more about how a digital computer works. He categorizes digital computer into “discrete-state machines”, internal state is determined by the last state and input signal. Output signal is the indication of internal states. He believes Laplace’s idea that based on the initial state and input signals, it is possible to predict all the future states of everything within the universe. The calculation capacity of “Manchester” machine (2165000), according to Turing, should be enough. Finally, the question of “whether machine can think” is replaced by the question of “How well a digital computer can do in the imitation game”; in other words, when will observer C can be satisfied with the response answered by A played by a digital computer.