

Meeting Attendance:



Women in Computer Science Meeting 4

Article Writing for Volunteer Hours

The Father of Computer Science and AI

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Alan Turing, also known as the "father of computer science and AI," was a British computer scientist, cryptanalyst, and mathematician. Born on June 23, 1912, in Malda Vale, London, England, he studied at the University of Cambridge. Turing continued his studies at Princeton's Institute for Advanced Study. After his studies, Turing worked at Bletchley Park (the GCHQ wartime station), the National Physical Laboratory, and the University of Manchester Computer Laboratory. At the National Physical Laboratory, he worked on the Automatic Computing Engine and created a blueprint for store-program computers. These were used to develop personal computers at the time. He also made five significant advances in cryptanalysis, including the Bombe machine.

The Bombe machine was a mechanical device that deciphered messages. The engine was specifically designed to combat the German enigma machine. This machine allowed the Germans to encrypt messages using a specific letter. Without the letter, the message couldn't be deciphered by the receiver. Alan Turing perfected the Bombe device while working at Bletchley Park during WWII. The machine allowed the British and their allies to decipher the Germans' messages and turn the tide in the war. If you are interested in the story of the machine, I would recommend the movie "The Imitation Game," which is based on this story.

The first computer program for chess wasn't executed on a computer until 2012. From 1948 - 1950, Alan Turing wrote the program called "Turbochamp." The program represented the first stride toward AI. The program relied on the most basic rules of chess and could only "think" 2 moves ahead. Turing attempted to implement the code on the Ferranti Mark, the first commercially available computer but failed in 1951. Determined to test his program, he printed the code and played a chess game, taking 30 minutes each turn to work through each line. Turing lost the match in 29 moves. Turing, unfortunately, died before his program was executed on a computer in 12. The code was put up against the chess Grandmaster to pay tribute to the fantastic scientist. "Turbochamp" lost in 16 moves.

Alan Turing wrote a paper called "Computing machinery and intelligence" in 1950. This paper outlined the beginning of many debates over AI. Part of the paper referred to the problem of how do we know when an AI is thinking. Were the line that determines if the program can think. In the paper, Turing proposes the Turing Test, also called the Imitation Game. In this game, there is a computer, a human interrogator, and another human. The human interrogator is to ask questions via the computer to each the AI computer and the other human. The goal is to determine which is the human and which is the computer. The computer is to do everything in its power to force the interrogator to determine it is human. One example is the computer pausing for an amount of time before answering a math question. Should it be ask if it is a computer, it should respond "no." Turing goes on to say that if the investigator fails to identify the human, this does not mean the AI is thinking, it is a good indicator as one of the tests to see if it is thinking but someone that is thinking could fail the test. Turing's goal was not to define thinking and intelligence. This test continues to get attention from philosophers and scientists and has been used in many debates.

Alan Turing did amazing work in computer science and cryptography though he had a troubled life. He died June 7, 1954 but his work was classified until 1970. The records of him cracking the enigma machine weren't released until the 1990s. Turing's death was tragic, homosexuality was illegal in the UK in the early 1950s. He was charged and forced to choose between hormonal treatment or jail time. He chose hormonal treatment so he could continue his work but he lost all security clearance and was barred from his cryptography work. He died by cyanide poisoning. This was ruled a suicide though questioned as an exorcism gone wrong. About 60 years later the Queen gave him a royal pardon. This led to the pardoning of all people convicted under the homophobic laws in a law called the Alan Turing Law. (If you want to learn more about his life the movie "The Imitation Game" goes into more detail)

References

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Example and google forms can be found on google classroom and the website

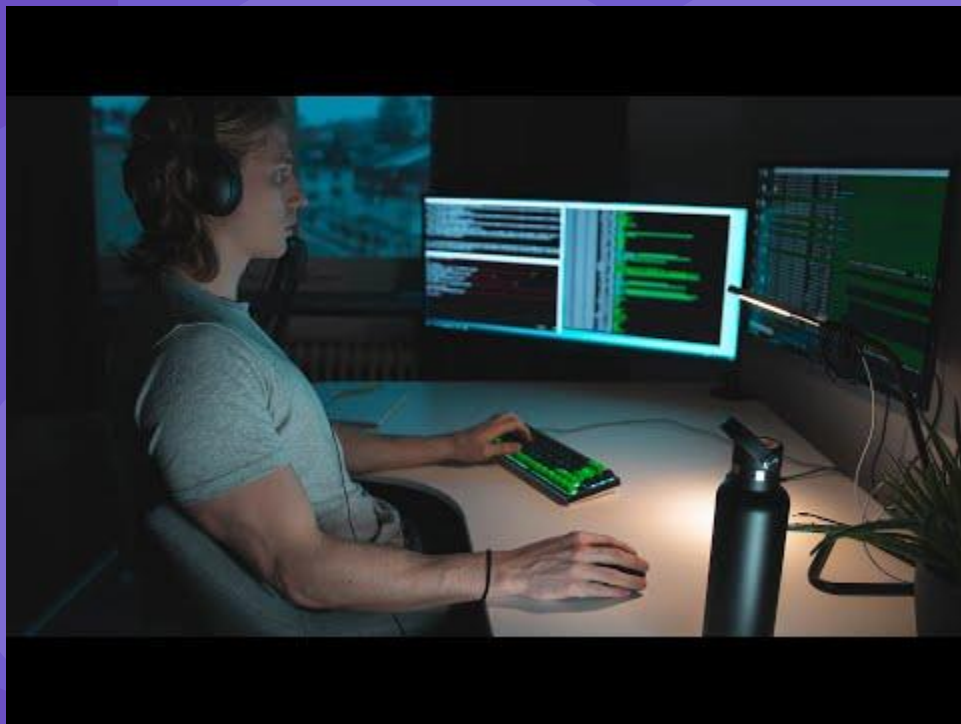
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