

## = Bertie the Brain =

Bertie the Brain was an early computer game , and one of the first games developed in the early history of video games . It was built in Toronto by Josef Kates for the 1950 Canadian National Exhibition . The four meter tall computer allowed exhibition attendees to play a game of tic @-@ tac @-@ toe against an artificial intelligence . The player entered a move on a lit keypad in the form of a three @-@ by @-@ three grid , and the game played out on a grid of lights overhead . The machine had an adjustable difficulty level . After two weeks on display by Rogers Majestic , the machine was disassembled at the end of the exhibition and largely forgotten as a curiosity .

Kates built the game to showcase his additron tube , a miniature version of the vacuum tube , though the transistor overtook it in computer development shortly thereafter . Patent issues prevented the additron tube from being used in computers besides Bertie before it was no longer useful . Bertie the Brain is a candidate for the first video game , as it was potentially the first computer game to have any sort of visual display of the game . It appeared only three years after the 1947 invention of the cathode @-@ ray tube amusement device , the earliest known interactive electronic game to use an electronic display . Bertie 's use of lightbulbs rather than a screen with real @-@ time visual graphics , however , much less moving graphics , does not meet some definitions of a video game .

## = = History = =

Bertie the Brain was a computer game of tic @-@ tac @-@ toe , built by Dr. Josef Kates for the 1950 Canadian National Exhibition . Kates had previously worked at Rogers Majestic designing and building radar tubes during World War II , then after the war pursued graduate studies in the computing center at the University of Toronto while continuing to work at Rogers Majestic . While there , he helped build the University of Toronto Electronic Computer ( UTEC ) , one of the first working computers in the world . He also designed his own miniature version of the vacuum tube , called the additron tube , which he registered with the Radio Electronics Television Manufacturers ' Association on 20 March 1951 as type 6047 .

After filing for a patent for the additron tube , Rogers Majestic pushed Kates to create a device to showcase the tube to potential buyers . Kates designed a specialized computer incorporating the technology and built it with the assistance of engineers from Rogers Majestic . The large , four meter tall metal computer could only play tic @-@ tac @-@ toe and was installed in the Engineering Building at the Canadian National Exhibition from 25 August ? 9 September 1950 .

The additron @-@ based computer , labeled as " Bertie the Brain " and subtitled " The Electronic Wonder by Rogers Majestic " , was a success at the two @-@ week exhibition , with attendees lining up to play it . Kates stayed by the machine when possible , adjusting the difficulty up or down for adults and children . Comedian Danny Kaye was photographed defeating the machine ( after several attempts ) for Life magazine .

## = = Gameplay = =

Bertie the Brain was a game of tic @-@ tac @-@ toe in which the player would select the position for their next move from a grid of nine lit buttons on a raised panel . The moves would appear on a grid of nine large squares set vertically on the machine as well as on the buttons , with either an X- or O @-@ shaped light turning on in the corresponding space . The computer would make its move shortly after . A pair of signs to the right of the playfield , alternately lit up with " Electronic Brain " and an X or " Human Brain " and an O , marked which player 's turn it was , and would light up along with " Win " when a player had won . Bertie could be set to several difficulty levels . The computer responded almost instantly to the player 's moves and at the highest difficulty level was almost unbeatable .

## = = Legacy = =

After the exhibition , Bertie was dismantled and " largely forgotten " as a novelty . Kates has said that he was working on so many projects at the same time that he had no energy to spare for preserving it , despite its significance . Despite being the first implemented computer game ? preceded only by theorized chess programs ? and featured in a Life magazine article , the game was largely forgotten , even by video game history books . Bertie 's primary purpose , to promote the additron tube , went unfulfilled , as it was the only completed application of the technology . By the time Rogers Majestic pushed Kates to develop a working model for the Exhibition , he had been working on the tubes for a year , developing several revisions , and the University of Toronto team felt that the development was too slow to attempt to integrate them into the UTEC .

Although other firms expressed interest to Kates and Rogers Majestic in using the tubes , issues with acquiring patents prevented him , Rogers Majestic , or the University of Toronto from patenting the tubes anywhere outside Canada until 1955 , and the patent application was not accepted in the United States until March 1957 , six years after filing . By then , research and use of vacuum tubes was heavily waning in the face of the rise of the superior transistor , preventing any re @-@ visitation of Bertie or similar machines . Kates went on to a distinguished career in Canadian engineering , but did not return to working on vacuum tubes or computer games .

Bertie was created only three years after the 1947 invention of the cathode @-@ ray tube amusement device , the earliest known interactive electronic game , and while non @-@ visual games had been developed for research computers such as Alan Turing and Dietrich Prinz 's chess program for the Ferranti Mark 1 at the University of Manchester , Bertie was the first computer @-@ based game to feature a visual display of any sort . Bertie is considered under some definitions in contention for the title of the first video game . While definitions vary , the prior cathode @-@ ray tube amusement device was a purely analog electrical game , and while Bertie did not feature an electronic screen it did run on a computer . Another special @-@ purpose computer @-@ based game , Nimrod , was built in 1951 , while the software @-@ based tic @-@ tac @-@ toe game OXO and a draughts program by Christopher Strachey were in 1952 the first computer games to display visuals on an electronic screen rather than light bulbs .