Might computers one day fall in love?

Jerusalem's Bloomfield Museum of Science has created a memorial to the tragic 'father' of computer science, Alan Turing, and aims to get youth interested in the field.

Judy Siegel-Itzkovich *reports*

(Judy Siegel-Itzkovich)

He was not a Jew, knew nothing about Judaism and never visited the Jewish state, which was founded six years before his tragic suicide by cyanide poisoning in 1954. But Israeli lovers of computers and technology have enough of a fond spot in their hearts to build and appreciate a long-term exhibit at Jerusalem's Bloomfield Science Museum to Alan Turing, the British "father" of computer science and artificial intelligence.

As Israelis are leading entrepreneurs in computer software and hardware, it seemed almost mandatory that an exhibit to mark the centennial of Turing's birth be established here as a testament to the man who had so many talents and suffered such a tragic end.

The exhibit, due to remain as a showcase at Bloomfield near the Israel Museum for a few years and suited for children aged eight and up, is titled CAPTCHA. This stands for Completely Automated Public Turing test to tell Computers and Humans Apart. This is similar to online human verification, where web pages ask users to type in letters and numbers to verify that they are human and not an automated program trying to use a service without authorization.

The idea for an Israeli centennial exhibit was originally suggested by a computer scientist at the Weizmann Institute of Science and Tel Aviv University, and as it took time to build it, it has opened closer to Turing's 101st birthday.

The CAPTCHA exhibit at Bloomfield is open from Monday to Thursday between 10:00 a.m. and 6 p.m.; Friday from 10 a.m. to 2 p.m.; and Saturday from 10 a.m. to 3 p.m.

The exhibit, on an upper floor on the museum's newer wing, was opened recently by a VIP audience which included Jerusalem Mayor Nir Barkat; Harry Bloomfield, who with his now-disabled mother, Neri, financed the museum; Bloomfield Museum director Maya Halevy; Intel Israel general manager, Kiryat Gat Fab 28 plant manager and Intel Corporation vice president Maxine Fassberg; and former Hebrew University president and Einstein expert Prof. Hanoch Gutfreund.

The museum was opened to the public in the Givat Ram quarter in the summer of 1992. The museum was created at the initiative of HU Prof. Peter Hillman, who served as its founding director. Its establishment was made possible through close collaboration with HU and the Jerusalem Foundation through a generous donation from the Bloomfield family in Canada. From the outset, the museum's goals were to increase interest among the general public in science and technology in the world around us, promote excellency in sciences among youth and present science and technology as an integral part of human culture.

About 120 guests were present at the ceremony in the museum's auditorium.

THE ELECTRONIC computer was invented seven decades ago – although came into common use less than 30 years ago – and has already pushed its way into every aspect of our lives. It is so all-encompassing that we often forget to ask ourselves what the meaning of this amazing device is, what the scientific basis for it is, and how it affects scientific thought in the present and future.

At the main entrance to the exhibit, the visitor has to make a choice – either walk through a passageway, causing his body to trigger a vote on the question of whether computers will some day fall in love or walk through another that rejects this idea. The second clearly seemed to be the majority view of the seemingly unromantic crowd.

Turing, a mathematician who foresaw the computer already in 1936, did ask these questions, and he understood then, at a time before there were computers, that the device would serve as a mirror with which we can examine the essence of the brain and our consciousness. This philosophical breakthrough places computer science at the front of modern science and allows computer science to deal with challenging and fascinating problems.
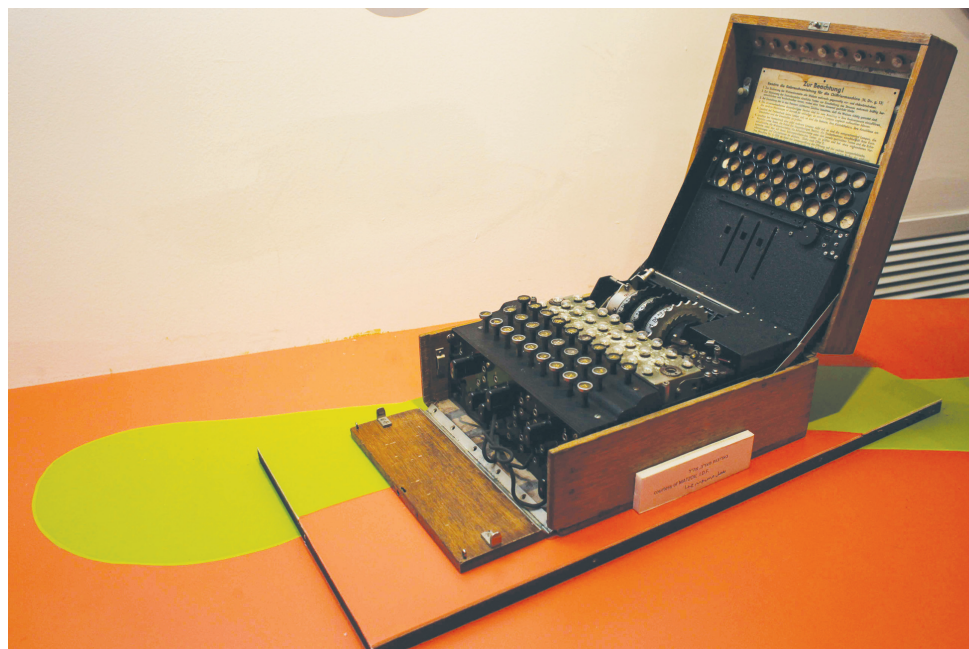
Computers used to be huge, requiring a whole room to carry out the functions that any cellphone or laptop does today. Although we've advanced incredibly in miniaturization and improving their power, it's not so clear whether we've stopped to think about the their impact on us and society.

The science museum's special exhibit is dedicated not to the technical nuts and bolts of how computers function but to philosophical questions surrounding computer usage, all of which have daily practical applications. These "thinking machines" produce powerful coding that enables banking and commerce on the Internet; new research tools used in all fields of human endeavor; global communication networks that have changed the face of society, politics and relationships and medical technologies that save and improve lives. As Israel is such an important center in the research and development of all these, CAPTCHA presents the Israeli achievements in these fields.

There are dials with Hebrew, Arabic and English characters for creating and decoding encryptions, teasers such as whether a washing machine is a computer and a variety of puzzles in which colorful geometric figures have to be sequenced on a board. The rooms are very colorful, with red and metallic colors predominant and a large amount of shiny, transparent acrylic.

"What are the limits of computers' abilities, and what will it never be able to compute?" is one of the questions posed by the exhibit. Will the computer surpass us in its wisdom and will it ever reach a level of consciousness similar to ours? Can a computer be creative? What does all of this say about us and our thoughts? What is the scientific basis on which the meaning of the computer stands? What is the computer's impact on scientific thinking? Are there limits to a computer's ability to calculate? Are computers creative? Do they cultivate wisdom or foster self-awareness, or the opposite? How does all this impact our minds?

Turing formalized the concepts of algorithm and computation with the Turing machine, which its namesake created in 1936 as a hypothetical device that manipulates symbols on a strip of tape according to a collection of rules. It was quite simple, but it nevertheless could be used to simulate the logic of any algorithm and helps explain how a computer's central processing unit (CPU) works.

Turing ended his his life ended when he was only 42. As homosexual acts were then illegal in England, he agreed to chemical castration to avoid being jailed. Before these tragic events, the neatly combed, good-looking Turing found time to be a philosopher and technologist, mathematician and code breaker, thinker and doer. His photograph and details about his life were hang at the entrance to the exhibit.

As a homosexual, he has no living descendants except for a nephew, and he personally never enjoyed the recognition he deserved. But now, 100 years and eight months after his birth, he is getting it.

Alan Turing (above right); main exhibit hall; Enigma machine; how to code and decode (Courtesy: Bloomfield Science Museum); Jerusalem Mayor Nir Barkat and Intel-Israel's Maxine Fassberg play tic-tac-toe (Judy Siegel-Itzkovich)
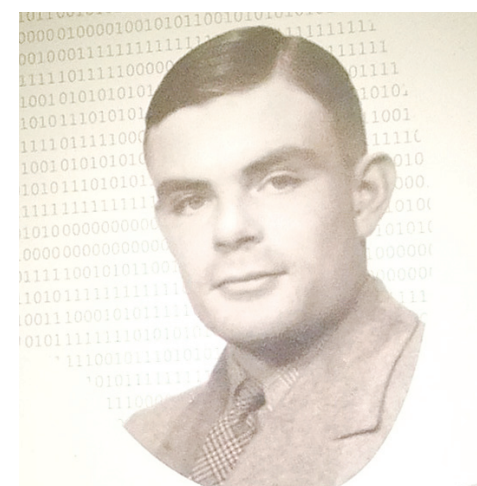
MAYOR BARKAT clearly felt comfortable at the exhibit. Sitting in front of a display next to Fassberg, he even tried – unsuccessfully – to win a game of tic-tac-toe against a computer that set down the rules.

"PCs came out when I was a child, and my father – a professor of physics – taught me how to write code in BASIC. I served in the army for six years and then heard that the first computer virus hit the Hebrew University via the Internet," Barkat related. He developed a pioneering program to fight viruses and diversified into security software through his company BRM, which became the hugely successful Checkpoint, that began with firewalls.

"It required a high level of creativity. I look back and think that we had a great opportunity to be expert in technology at young age. It gave us a big advantage. Com-

puters for me were like ABC. Even today I use tools I learned then."

The Turing exhibit, the mayor continued, will stimulate interest among young people, not just to spend their time on Facebook and Google but how we got there. "As a hands-on museum, it encourages kids to try things out," he said.

Fassberg, who was praised for her ability to make partnerships and is a member of Bloomfield's board, helped finance the exhibit along with Google Israel, Checkpoint and others.

"Maureen is excellent in making partnerships; they make museum what it is," Barkat said.

EXHIBIT CURATOR Nathan Zeldis, who was an engineer at Intel Israel for 26 years but in recent years has worked solo as an organization expert, said he hopes computers will continue to make the world a better place. He previously designed two other exhibits at Bloomfield. Spending a year on this one – the first six months just developing the concept – he became one of the world's experts on Turing.

There are other Turing centennial exhibits, especially in London, and Jerusalem's is small by comparison, but it is nevertheless very impressive. Educational items throughout the five rooms that comprise it were designed and built solely by the museum staff.

"Most Israelis don't know much or anything about Turing," Zeldis stated, but there have been some shows on TV, and some have heard about Enigma, the code machine used by the Nazis during World War II. Turing was part of the British team that worked on breaking the Enigma encryption. The Enigma device, which is displayed in the exhibit, produced excellent intelligence for the Allies and made a huge contribution to their victory.

Although some critics could argue that children and teens who visit the exhibit may be lazy and just play with geographical puzzles, push and pull levers and practice encryption but not exert themselves to really understand the scientific principles behind them, Zeldis asserted that young

people can start by playing and eventually fall in love with science.

"There are children who will inevitably become scientists because nothing can prevent them; there are those who will never be interested in it whatever you do; and then there are youngsters who just need a push and will go for it, even though they initially held no interest in it. We meant the exhibit for them."