

Computers learn art appreciation

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A new program developed in the Department of Computer Sciences at the University of Haifa enables computers to "know" if an artwork is a Leonardo da Vinci original or the work of a less well-known artist. Using computer vision the computer is able identify the artworks of different artists after turning the works into a series of mathematical symbols, sines and cosines.

A new mathematical program developed in the Department of Computer Sciences at the University of Haifa will enable computers to "know" if the artwork you are looking at is a Leonardo da Vinci original, as the seller claims, or by another less well known artist. "The field of computer vision is very complex and multifaceted. We hope that our new development is another step forward in this field," said Prof. Daniel Keren who developed the program.

Through this innovation, the researchers "taught" the computer to identify the artworks of different artists. The computer learned to identify the artists after the program turned the drawings of nature, people, flowers and other scenes to a series of mathematical symbols, sines and cosines. After the computer "learns" some of the works of each artist, the program enables the computer to master the individual style of each artist and to identify the artist when looking at other works – works the computer has never seen.

According to Prof. Keren, the program can identify the works of a specific artist even if they depict different scenes. "As soon as the computer learns to recognize the clock drawings of Dali, it will

recognize his other paintings, even without clocks. As soon as the computer learns to recognize the swirls of Van Gogh, it will recognize them in pictures it has never seen before."

This new development is a step forward in the field of computer vision. According to Prof. Keren, this field is still inferior to human vision. "Human vision has undergone evolution of millions of years and our field is only 30 years old. At this stage computers still have difficulty doing things that are very simple for people, for example, recognizing a picture of a human face. A computer has difficulty identifying when a picture is of a human face or how many faces are in a picture. However, computers are very good at simulating and sketching 3 dimensional images like the arteries in the brain or a road network."

At present, the new program can be helpful to someone who appreciates art, but not to a real expert in the field. If you are a novice who paid a hefty price for a picture that the seller claimed is an exact copy of a Da Vinci, the program can tell you if you wasted your money or made a smart purchase.

Source: University of Haifa

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