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Locating a primary tumor is possible to achieve in a few seconds, with a pretty great precision, by clicking on a computer. Computer method that makes it possible was innovated at the Institute "Mihajlo Pupin" and its creator is a scientific advisor of the institution Dr Jelena Vasiljevic. For this software Dr Vasiljevic received an award at the recent Fair of medicine, following the award "Step into the Future" previously received at the Technical Fair. Once her project, receives authorization certificate for use in Serbia, primarily awarded by the Ministry of Health, it will be implemented in hospitals to facilitate the work of pathologists for cancer diagnostics.

Dr Jelena Vasiljevic applied the "open source" software for large image files. The principle of using this program is quite simple: The biopsy sample taken from the patient is photographed and then the image is inserted into the computer. After a short time with an accuracy of more than 70 percent, and in some cases 80 percent, the softer application provides diagnostics where the primarily appeared a cancer which later developed metastases in other parts of the body, explains Dr Jelena Vasiljevic for "Politika" daily.

- My idea was to apply the software which would analyses images of the biopsies of patients who who are in late stage of cancer development. I believed that, the primary cancer can be detected based on the photo multifractal analysis, and special computer mode image processing, I used 1,050 different samples of biopsy and during my research I realized that it is possible to achieve the high reliability of the software to detect where in the body the primary cancer appeared in patients. - said Dr Jelena Vasiljevic.

This finding may contribute to faster and safer diagnosis in detecting cancer. Dr Vasiljevic's idea was to facilitate the work of pathologists, considering that analysing samples under a microscope is very difficult and time consuming work, given the huge number of patients who are doing a biopsy and the imperfections of the human eye, there is a possibility of error, says our interlocutor.

For cancer patients time is very important, to start the treatment as soon as it detects the primary tumor, and many are waiting for results of the biopsy for a long time. This software could very quickly determine where the organ disease was primary created on. The application has a possibility to insert multiple images, which enables doctors' work as much easier and faster - says Dr Vasiljevic.

This software has attracted great attention of experts in the field of medicine, and doctors whose work is cancer diagnose. Our interviewee believes that with special training, it is possible to apply the software to other types of cancer, not only in bone metastases. She conducted research on this as part of her master's thesis six years ago. During the research she analyzed biopsy samples through the software and she identified whether the patient is suffering from colon cancer or has a benign tumor. This computer program could also be used in the diagnosis of disease based on images obtained on MRI and scanner.

According to Dr Vasiljevic, it is possible to achieve high reliability by applying multifractal analysis and review of patient samples from the Institute of Oncology in patients with breast cancer. We studied how chemotherapy will be successful in these patients, and showed that the results were correct in 91 percent of cases -

Love for biology and genetics has affected this scientist, an Electro Technical Engineer by profession and lecturer at the School of Computing in Belgrade, to perfect the software that would be useful in medicine. Her desire to help in the cancer diagnostics was initiated while she was still a teenager, because at sixteen she lost her father, to the cancer.

Offers for the purchase of software are coming from Slovenia, and there is interest in Serbian oncology institute for this program too. If there is a market, says Dr Vasiljevic, the software will not be expensive, and for its implementation, only authorized licenses are required. DECIM (Detection of Cancer on Microscopic Image) is the name of the software which is developed by Dr Jelena Vasiljevic, and it was created in cooperation of the Institute "Mihajlo Pupin" with the Institute of Pathology, Military Medical Academy and the Faculty of Computers.



Jelena Vasiljevic (Photo: Z. Anastasijević)