Invention paves the way to better ovarian cancer diagnosis (w/ Video)

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Overseen by her thesis supervisor and in collaboration with B.C. Cancer Agency scientists, a Simon Fraser University doctoral student is developing a faster, more reliable way to diagnose ovarian cancer.

Computing science student Aïcha BenTaieb is designing a computer-aided diagnostic system at SFU's Medical Image Analysis Lab that will more accurately and more quickly identify ovarian cancer's many subtypes than the current technique.

Currently, before treatment can begin, pathologists use a microscope to identify tissue samples from cancerous ovarian tumours. According to OVCARE, a B.C.-based ovarian cancer research team, every three-and-a-half-hours in Canada a woman is diagnosed with ovarian cancer —one of the most fatal and least understood cancers. Time is of the essence.

With research help from SFU computing science professor Ghassan Hamarneh and B.C. Cancer Agency pathologists Drs. David Huntsman and Hector Li Chang, BenTaieb's automated system will speed up decision-making on appropriate chemo- or radiation therapies.

"Traditional classification can be easily impaired by technical factors such as lighting and the pathologist's experience," explains BenTaieb. "Despite having guidelines for diagnosis, each pathologist has his or her own understanding of the disease, and the act of visually classifying something remains subjective. Classification can also be costly, as non-

expert pathologists require long hours of training and additional testing might be needed."

BenTaieb's computer prototype is programmed to classify the appropriate cancer subtype using expert-annotated tissue-sample images. They have an agreed-upon subtype verified through biological testing.

The system's built-in artificial intelligence is then able to interpret tissue samples and identify the appropriate cancer subtype by comparing the sample's visual appearance to annotated images.

So far, the results have been promising. The system is already correctly classifying the subtypes in more than 92 per cent of cases.

BenTaieb will present her research paper on this development at the 18th International Conference on Medical Imaging Computing and Computer Assisted Intervention (MICCAI) in Munich, Germany, Oct. 5 to 9. Her paper is called "Automatic Diagnosis of Ovarian Carcinomas via Sparse Multi-resolution Tissue Representation".

Provided by Simon Fraser University

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