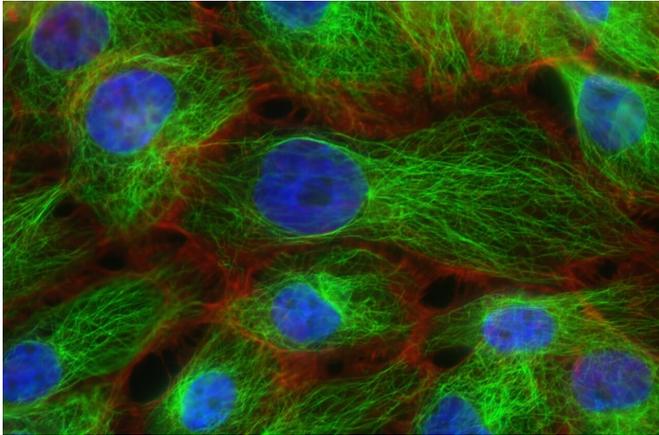


# Bio-inspired algorithm detects early signs of breast cancer

17 March 2021, by David Bradley



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A computer algorithm based on a biological process could be used to detect breast cancer more effectively, according to new research published in the *International Journal of Innovative Computing and Applications*. A team from India has improved on earlier bio-inspired algorithms to develop a particle swarm optimisation and firefly algorithm that boosts detection accuracy by up to 2 percent taking it to as much as 97 percent accuracy.

Moolchand Sharma and Shubbham Gupta of the Maharaja Agrasen Institute of Technology in New Delhi and Suman Deswal of the Deenbandhu Chhotu Ram University of Science and Technology in Murthal, Haryana, explain that [breast cancer](#) in women is common the world over and mortality rates are the second-highest and rising year by year. Early detection is critical to timely intervention that can improve prognosis and reduce the number of women who die prematurely from this disease.

The team points out that experiments with many different types of computer algorithms have been researched in recent years with a view to finding a

way to automate the detection process from mammograms and improve the positive tests and lower false-positive results from screen programs. Their aggregated algorithm inspired by biological processes has been tested on archived data from the Breast Cancer Wisconsin (Diagnostic) Data Set and shown to have an accuracy of at least 93 percent. By adding a random forest classifier that accuracy can then be boosted to 97 percent, the team reports.

The team points out that there is still scope for further optimization and to improve that [accuracy](#) perhaps by focusing more on the identification of key features in the scan images, such as texture and smoothness. They also add that the same approach might be readily extended to the diagnosis of other diseases by training the algorithm on appropriate data in the same way that they trained their [algorithm](#) on breast cancer data.

**More information:** Moolchand Sharma et al. Modified bio-inspired algorithms for diagnosis of breast cancer using aggregation, *International Journal of Innovative Computing and Applications* (2021). [DOI: 10.1504/IJICA.2021.113615](https://doi.org/10.1504/IJICA.2021.113615)

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