

Lecture Notes in Networks and Systems 1148

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# Proceedings of 5th International Ethical Hacking Conference

Leveraging AI to Law (eHaCON 2024)

 Springer

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# AI in the Detection of Breast Cancer and Related Ethical and Legal Issues



Keya De Mukhopadhyay, Tapas Guha, and Abhisikta Basu

**Abstract** Breast Cancer accounts for a significant percentage of malignancy among women globally. It is a disorder where abnormal breast cells develop uncontrollably and form tumours when left untreated, the tumour could spread throughout the body and become fatal. So, early detection is critical for survival. The clinical outcomes of breast cancer can be significantly improved with an accurate and timely diagnosis. Significant advancements in breast cancer diagnosis and customized treatments have been made possible, by the emergence of Artificial Intelligence particularly in the field of image analysis, the K-Nearest Neighbors algorithm is one of the simplest and easily interpretable supervised ML algorithms, which can determine whether the cancer lumps are malignant or benign. KNN, SVM, and GRNN are machine learning algorithms that make use of an openly accessible dataset, features taken from images, data pre-processing techniques, and Principal Component Analysis (PCA) in order to improve accuracy and decrease diagnostic time. Artificial Intelligence can identify both missed cancers and breast tissue features, which in turn, can help to predict future cancer development. Some Artificial Intelligence algorithms excel at predicting patients with a high risk of interval cancer, which is aggressive. When no cancer was clinically detected by screening mammography, even Artificial Intelligence algorithms trained for short time horizons can forecast the chance of developing cancer for up to five years in the future. The WHO reports that low- and middle-income nations account for over 80% of fatalities from breast and cervical cancer. In the developing economic scenario of India, one in 28 women is likely to

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