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|  | **Department of Computer Science and Engineering**  Bangladesh University of Business and Technology (BUBT) | BUBT |

**CSE 498: Literature Review Records**

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| **Student’s Id and Name** | **Name:** Sm Raziur Rahman Pushon, **ID:** 19202103214 |
| **Project Title** | Deep Learning in Healthcare: Breast Cancer Detection and Classification using Image Processing and CNN |
| **Supervisor Name & Designation** | **Name:** Khan Md. Hasib, **Designation:** Assistant Professor, Department of CSE, BUBT |
| **Course Teacher’s Name & Designation** | **Name:** Khan Md. Hasib, **Designation: :** Assistant Professor, Department of CSE, BUBT |

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| **Aspects** | **Paper # 03 (Title)** |
| **Title / Question**  (What is problem statement?) | Breast Cancer Diagnosis Using Deep Learning Algorithm. |
| **Objectives / Goal**  (What is looking for?) | Using the Wisconsin Breast Cancer database, this research aims to propose the use of a Deep Learning method, specifically a Convolutional Neural Network (CNN), for the diagnosis and detection of breast cancer. The main goals are to use deep learning technology to increase the precision of breast cancer diagnosis and to show how well this method works when used with medical datasets. The goal of the research is to use deep learning to diagnose breast cancer with a high degree of accuracy, which may help in early cancer detection and better treatment outcomes. |
| **Methodology/Theory**  (How to find the solution?) | In order to diagnose and detect breast cancer using the Wisconsin Breast Cancer dataset, this research proposes a deep learning method, namely a Convolutional Neural Network (CNN). The approach includes the acquisition of data, preprocessing (including feature reduction using Principal Component Analysis), data visualization, model implementation with CNN, accuracy evaluation, comparison with different machine learning techniques, and the recommendation of future work. The proposed method's precision of 99.67% demonstrates its efficacy in the diagnosis of breast cancer. |
| **Software Tools**  (What program/software is used for design, coding and simulation?) | It does state that the work was carried out in the Python-based Anaconda environment and that the scikit-learn module was used for machine learning implementations. |
| **Test / Experiment**  How to test and characterize the design/prototype? | The model was tested using a training dataset and a testing dataset after the data was prepared and machine learning algorithms were built, but it does not go into detail about the specific testing procedures or characterization criteria. |
| **Simulation/Test Data**  (What parameters are determined?) | For the purpose of diagnosing breast cancer, it employed 11 features from the Wisconsin Breast Cancer Dataset. After the dataset underwent preprocessing, several traits were discovered. |
| **Result / Conclusion**  (What was the final result?) | The Convolutional Neural Network (CNN), which is the suggested deep learning method, obtained an accuracy of 99.67% for identifying breast cancer using the Wisconsin Breast Cancer Dataset, according to the paper's final finding. This suggests that the model's predictions are highly accurate. |
| **Obstacles/Challenges**  (List the methodological obstacles if authors mentioned in the article) | The proposed deep learning algorithm and its outcomes are principally presented. |
| **Terminology**  (List the common basic words frequently used in this research field) | Deep Learning, Convolutional Neural Network,Neural Network, Random Forest, Support Vector Machine, MachineLearning,WDBCDataset. |
| **Review Judgment**  (Briefly compare the objectives and results of all the articles you reviewed) | The three articles all focus on improving breast cancer diagnosis and detection. SVM does well in both of the first two tests, which compare machine learning methods. The third paper uses deep learning and achieves a significantly greater accuracy, demonstrating the potential of deep learning in this field. |
| **Review Outcome**  (Make a decision how to use/refer the obtained knowledge to prepare a separate and new methodology for your own research project) | I may use the information I gathered from the publications to develop a new methodology for my research project by taking a methodical approach. Understanding the papers' aims, methods, findings, and conclusions is crucial before moving forward. The applicability of the knowledge gained to the project's goal is next examined. I have to apply the knowledge while taking the project's requirements and variable factors into mind. |