Artificial Intelligence-Based Cancer Classification and Prediction Using Machine Learning and Deep Learning Approaches

Problem Statement:

"Cancer Classification Using Artificial Intelligence and Machine Learning Techniques"To collect and preprocess cancer-related datasets (e.g., images, genomic data, biopsy reports) for model training and testing.To apply machine learning (ML) and deep learning (DL) algorithms for accurate classification of cancer types (e.g., benign vs malignant).To evaluate model performance using metrics like accuracy, precision, recall, F1-score, and ROC-AUC. To implement an automated system that assists healthcare professionals in early diagnosis of cancer. To compare different models such as SVM, Random Forest, CNN, etc., and determine the most effective approach for classification. To reduce manual diagnostic errors and improve the speed and accuracy of cancer detection using AI.Integration with real-time medical systems: Deploy AI models in hospitals and diagnostic labs for real-time cancer screening and assistance. Multi-cancer classification: Expand the model to identify and classify multiple cancer types (e.g., lung, breast, skin, prostate) from various data formats. Explainable AI (XAI): Develop interpretable models to help doctors understand why a prediction was made.Personalized medicine: Use AI for recommending treatment plans based on the type, stage, and genetic profile of the cancer. Remote diagnostics: Enable rural or remote diagnostics using mobile-based AI applications or telemedicine.Integration with IoT and wearable devices: Monitor patient vitals and detect anomalies that may indicate cancer recurrence.