AI in Oncology: Detecting Cervical Cancer Through Deep Learning and Image Analysis

Proud to unveil the culmination of our academic endeavor: "Cervical Cancer Detection using Cytopathology Images"-a research project developed as part of our final semester at Adichunchanagiri Institute of Technology, Department of Computer Science & Engineering.

This initiative merges the power of machine learning and image processing to tackle one of the world's leading causes of cancer-related deaths in women. Our model automates the detection of cervical cancer stages using advanced CNN architectures and robust image preprocessing techniques.

Project Highlights:

- Built a CNN-based sequential model for classifying cytopathology images into distinct cancer stages (Stage 1 to Stage 4).

- Developed a dataset amplification strategy to enhance model robustness and reduce class imbalance.

- Applied OpenCV, TensorFlow, and Flask to build a fully functional diagnostic interface.

- Achieved promising accuracy and specificity on independent datasets, demonstrating strong potential in early-stage cancer detection.

Technical Excellence:

- Integrated grayscale conversion, segmentation, and feature extraction for enhanced image clarity.

- Optimized classification through deep feature fusion and data augmentation.

- Experimented with SVM, KNN, and CNN for model comparison, choosing CNN for superior spatial feature learning.

Grateful for the unwavering support of our guide, Mrs. Keerthishree B.T, and my talented teammates Aishwarya H G, Amulya N Raj, Ananya N Raj, and Rukhaiya Bi. Your collaboration made this journey remarkable.

We believe AI can revolutionize preventive healthcare. Let's connect and shape the future of medical technology together!

#ArtificialIntelligence #DeepLearning #HealthcareAI #CervicalCancer #MedicalImaging #CNN #MachineLearning #AIinHealthcare #WomenHealth #CancerDetection #ComputerVision #DigitalHealth #Python #TensorFlow #InnovationInHealthcare #AITChikkamagaluru #TechForGood #HealthTech