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(57) Abstract :
Title: Al and loT Based Oral Pre Cancer Biopsy Guidance and Detection System 5 10 15 The Al and loT Based Oral Pre Cancer Biopsy Guidance and Detection System is an intelligent medical imaging device designed to assist clinicians in identifying optimal biopsy regions in oral cancer-suspected areas. The system integrates a Raspberry Pi microcontroller, a high-resolution camera module (102), and an illumination unit (101) for accurate intra-oral imaging. A trained deep learning model performs real-time segmentation of cancer-affected regions to highlight the most suitable biopsy site. The device features a display (108) that generates a QR code and OTP for secure access to the web application, allowing doctors to view live images. It includes HDMI ports (104, 105) for external display,, a rechargeable battery module (106) for portable use, and a user-operated button (103) for simplified image capture and analysis. This innovation addresses the challenge of accurately locating regions for incision biopsy in complex oral lesions, particularly in early-stage cancer detection.

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