

Al-enabled Image Processing:

Screening and Staging the severity of Cervical cancer through Cervigrams



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SCALING OF SEVERITY

INTRODUCTION

The second most common disease in women, cervical cancer represents a significant unmet clinical need. In developing nations, early detection is not frequently available, and the typical method of detection (the Pap smear test) is inadequately sensitive or specific.

In order to enable large-scale quick screening and lessen its load, it necessitates a reliable and effective technology. This served as the foundation for creating an interactive and powerful diagnostic tool with the capacity to quickly record and evaluate the morphological and clinical characteristics to precisely detect and diagnose cervical cancer in settings with constrained resources. For its large-scale screening, computational automation of digital colposcopy can considerably improve accuracy and minimize error rates in diagnosis, enabling speedier and more effective intervention options.

The use of non-invasive/minimally invasive technology as an additional clinical aid for enabling the quick and accurate screening of cervical cancer would be made possible by developing an advanced automated diagnostic tool employing image analytics.

What can we turn to? **OM- The OncoMeter**

By triaging patients/participants, OM-The OncoMeter offers a comprehensive and quick segmentation of the severity of cervical cancer. We offer you a rank and scale of the grade online to triage patients for treatment to be included or excluded using cervigrams taken with a smartphone.

In order to facilitate the assignment of a numerical score to the normal cervigrams and the abnormal cervigrams and to rank them based on their EMD score, it was subjected to preprocessing algorithms to remove the noise that could be interfering with the extraction of the image. These algorithms include green channel color-coding algorithms and the Earth Mover's Distance (EMD) algorithm.



OM- The OncoMeter Severity Ranking:

Healthy	Severe
CLASSIFICATION/ GRADE	SCALE
Normal	0–26.77
Abnormal (Nabothian cyst, vaginitis, cervical erosion, polyp)	8.162584-146.8711
Cervicitis	19.41418-140.2637
Precancerous	34.65366-36.1091
Suspected Cancer	67.77164-78.53794
Squamous Cell Ca cx	21.01863-92.59932
Ca cx I	21.58473-68.71633
Ca cx II	27.55506-103.9834
Ca cx III	51.99892-106.1609
Ca cx IV	42.90317-75.26646

This Whitepaper is an extraction from the paper "Earth Mover's Distance-Based Tool for Rapid Screening of Cervical Cancer Using Cervigrams".

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