

Earth Mover's Distance-Based Tool for Rapid Screening of Cervical Cancer Using Cervigrams "ONCOMETER"

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Despite being highly preventable, cervical cancer remains a leading cause of death and disability among women in India.

1 in 50
Indian women will develop
cervical cancer

Research and technical services to reduce the

Lack of education , HPV vaccine use still v low, Facilities for early diagnosis very uneven, Social Stigma, female sex, leads often to late presentation

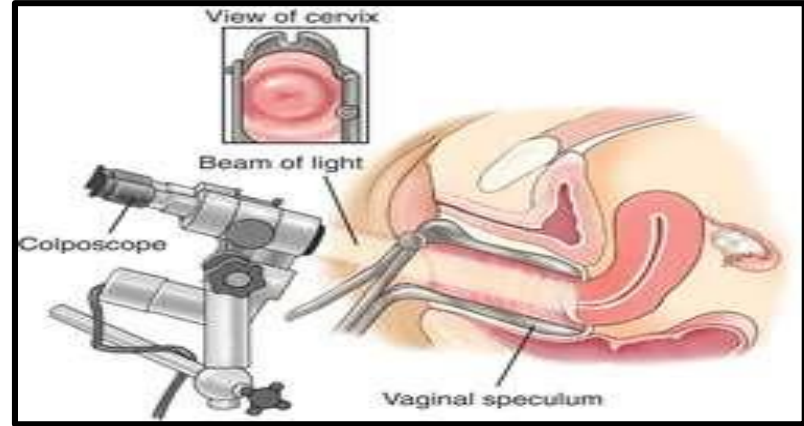
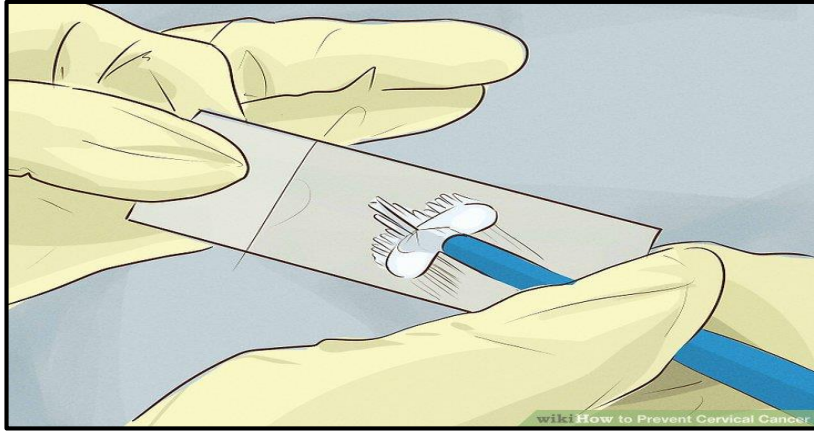
CERVICAL CANCER

IRTI
INTERNATIONAL

www.rti.org

Sources: (1) Institute for Health Metrics and Evaluation .2011. The Challenge Ahead: Progress in Breast and Cervical Cancer. (2) GLOBOCAN 2012: Estimated Cancer Incidence, Mortality, and Prevalence Worldwide in 2012.

- ❖ Cervical cancer remains a significant public health concern worldwide, especially in regions with limited access to healthcare resources. Early detection is crucial for effective treatment and improved outcomes.
- ❖ Cervical Cancer is the fourth most common cancer worldwide.
- ❖ **Approximately 185 Women die every day***
- ❖ **Approximately 8 women die every hour**
- ❖ **A woman dies every 8 minutes**




Problems & Challenges

At present Identification and diagnosis of Colposcopically obtained Cervi gram is a time consuming task which requires expertise and resource.

- ┆ Lack of Pathologist and work load results in improper diagnosis and often missed diagnosis.
- ┆ Cervical Cancer Screening is not done at adequate level.

Proposed Solution:

An accurate easy to use and robust Diagnostic tool with an APP based diagnostic algorithm can reduce the time and error in Cervical Cancer Diagnosis and Screening can be done for Early detection in healthcare settings with least resources even at the community level. Utilizing HCW in the field.

 **Our Thought:**
Development of a robust image analysis tool which is:



METHODOLOGY :

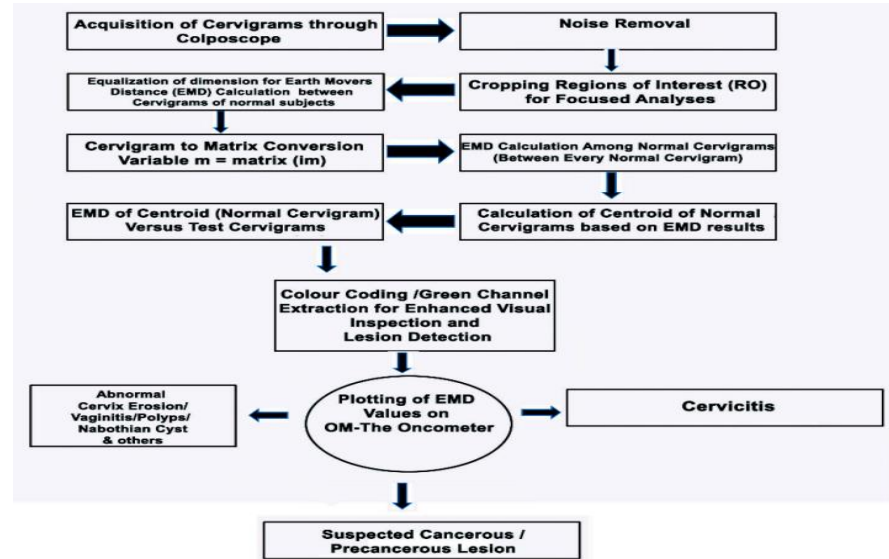
- A) Target population
- B) Inclusion criteria :
 - C) (a) Married women over 18 years.
 - (b) Women who provide written informed consent.
- Exclusion criteria :
 - (a) Pregnant women.
 - (b) Women had performed hysterectomy
 - (c) Women who do not provide written informed consent.



METHODOLOGY contd:

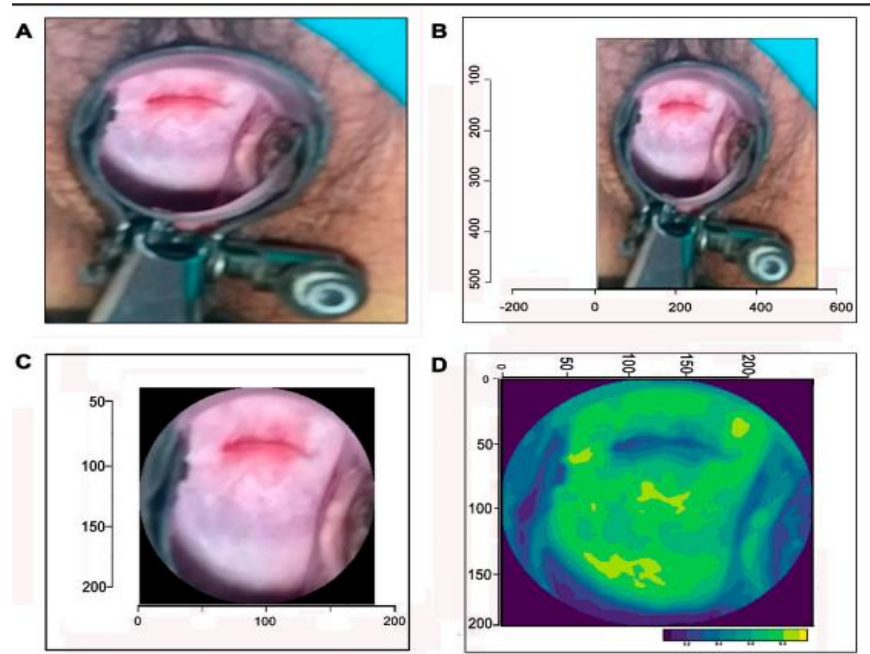
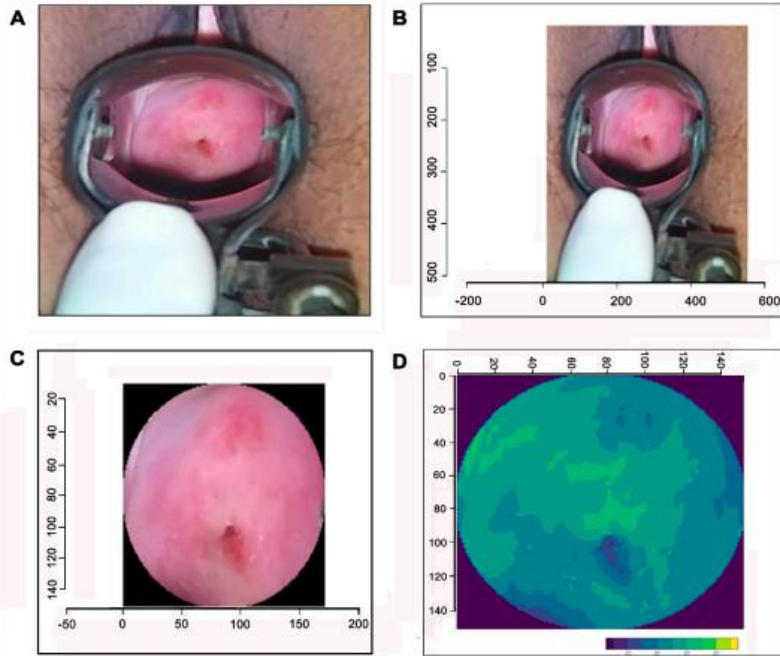
- A) Software platform for development and validation of colposcopic images/videos:
 Rstudio, Linux, MySQL
- B) Study area : Batra hospital & Medical Research Centre, New Delhi, Delhi State Cancer Institute, New Delhi, and extended community
- C) Data Collection:
- D) Cervigrams of Study participants- Obtained using EVA Digital colposcope for computational analysis.
- E) Clinical-Epidemiological data of Study participants- Questionnaire-based data collection.

STEPS INVOLVED IN CALCULATING EMD FROM CERVIGRAMS



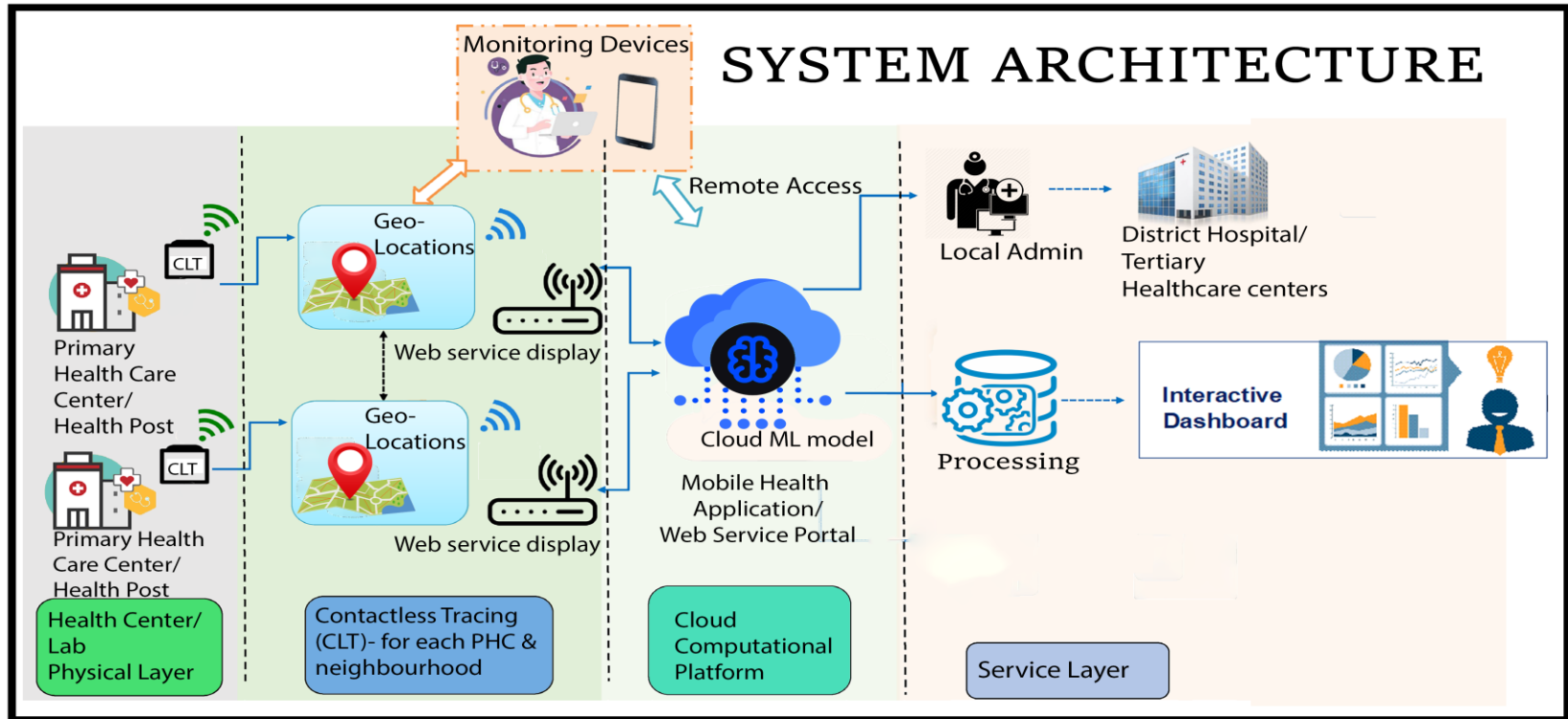
EMD : Measuring 2 dissimilarities of different frequency distributions

Differentiating normal from abnormal AND GRADING ABNORMALITIES



SCALABILITY

SYSTEM ARCHITECTURE

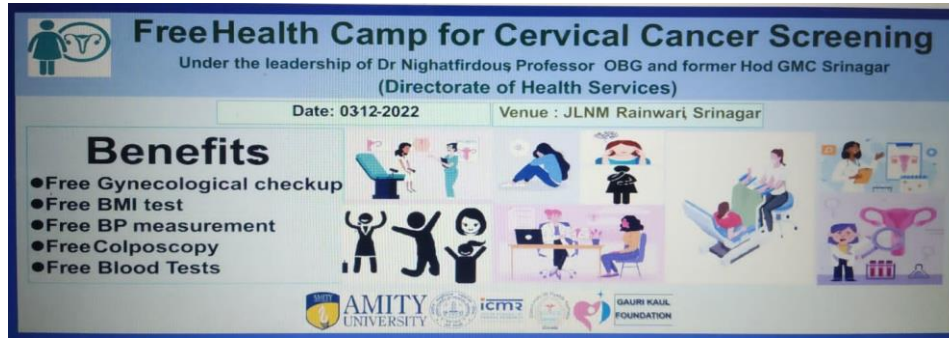


OUTCOMES ACHIEVED and EXPECTATIONS

**Early Detection and Improved Outcomes at community level
even in limited healthcare infrastructure**

- Reduced Disease Burden**
- Preventive Care**
- Cost Savings**
- Resource Allocation**
- Targeted Interventions**
- Health Equity**
- Quality Improvement**
- Patient Empowerment**

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Free Health Camp for Cervical Cancer Screening
Under the leadership of Dr. Nighatfirdous Professor OBG and former Hod GMC Srinagar
(Directorate of Health Services)

Date: 0312-2022 Venue: JLNM Rainwar, Srinagar

Benefits

- Free Gynecological checkup
- Free BMI test
- Free BP measurement
- Free Colposcopy
- Free Blood Tests

AMITY UNIVERSITY icmr GALURI KHALI FOUNDATION



Thank You