PapScanner: an automated system to detect cervical dysplasia

⚙ Applications

- The present invention PapScanner is a fully automated cervical cancer screening system using deep learning based visual evaluation algorithm.

- The algorithm can be also be used for both conventional and liquid based cervical cancer detection methods.

- This would enable automated, expert-level diagnosis of early cervical dysplasia dissemination with an effective point-of-care.

🧠 Inventors

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🔍 Categories of this invention

- ▶ Medical Devices (Diagnostics)
- ▶ Computer Science and IT (Artificial Intelligence)
- ▶ Lifesciences (Clinical Applications - Oncology)
- ▶ Medical Imaging

◎ Problem Addressed

Cervical Cancer is the second most common cancer among women worldwide. Human papillomavirus (HPV) vaccination and cervical screening are lacking in most lower resource settings, where approximately 80% of cancer cases occur annually. Visual inspection of the cervix following acetic acid application is practical but not reproducible or accurate.

PapScanner provides a solution as follows

- ✓ Automated accurate screening.
- ✓ Observer bias is reduced.
- ✓ It quantifies the features which may be interpreted by doctors in visual terms which are subjective to the concerned pathologist.
- ✓ Used as a mass screening tool and timely reports.

☀ Technology

- This invention pertains to an AI generated algorithm which uses a deep learning based novel binary classification system to classify Pap smear slide images as normal and abnormal.

- Further, a multiclass classification will classify the Pap smear slide images as NILM, ASCUS, LSIL, HSIL and SCC, which will reflect the degree of cervical dysplasia.

- The algorithm will predict the Pap smear slides when it has a confidence level of more than 90% so reducing the occurrence of false-negative and false positive.

- In addition, a web based application of PapScanner uses GUI which allows users to interact with the system with ease.

📊 Advantages

- Automated, fast and user friendly.

- No high-end infrastructure required.

- Reduces the workload of the pathologist by assisting in taking better decision.

- Cost effective screening tool

- Easy access from remote locations.

📈 Potential Value

1 The potential market size of cervical cancer is expected to increase significantly during 2017-2030.

2 The market value of cervical cancer treatment is over USD 7.9 billion by 2027 end with a CAGR of over 5.8% during 2020 to 2027.

3 Cervical Cancer screening market revenue is anticipated to rise at a considerable rate due to the prevalence of HPV.

Reach Us

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