TECH OFFER

AI-enabled Mobile Screening Tool for Men's Health

KEY INFORMATION

TECHNOLOGY CATEGORY:

Healthcare - Telehealth, Medical Software & Imaging

Infocomm - Artificial Intelligence

Infocomm - Video/Image Analysis & Computer Vision

TECHNOLOGY READINESS LEVEL (TRL): TRL8

COUNTRY: SINGAPORE

ID NUMBER: TO174764

OVERVIEW

Due to social stigma surrounding Sexually Transmitted Diseases (STD), cost barriers, and lack of awareness, a large proportion of men suffering from male health issues avoid accessing in-person medical care, instead, many men turn to online sources such as search engines or discussion forums to seek help. This further compounds the problem as this failure to seek medical attention leads to delays in diagnosis and subsequent treatment, while misinformation and misguidance from the general public can be dangerous and life-threatening. This technology aims to address the gap between crowd-sourced diagnosis and primary healthcare practitioners through a fully anonymous, AI-driven mobile application screening tool that covers 90% of genital pathologies e.g. bumps and lesions, and certain disease and viruses, such as syphilis, herpes, Human Papillomavirus (HPV).

This technology offer is Artificial Intelligence (AI) enabled mobile application that utilises a Convolutional Neural Network (ConvNet or CNN) deep learning algorithm equipped with custom-built network layers to screen for male health issues, e.g. genital warts, sexually transmitted diseases (STD) etc. Data augmentation techniques and synthetic data generation

methods have been used to vary the dataset and increase and sample size for realistic model training and testing. The highly accurate model has an accuracy of 60-90% for most cases of STI/STDs.

TECHNOLOGY FEATURES & SPECIFICATIONS

This technology offer comprises the following features:

- Vision-based AI algorithm which analyses a picture and detects/identifies STDs
- Built-in AI explainability - visualised as heatmaps that highlight the occurrence of recognised abnormalities/pathologies
- Synthetic data generation pipeline for data augmentation, data bias correction
- iOS and Android mobile applications with anonymised data acquisition

Web-based integration via a suite of REST APIs is also available for developer use.

To handle the issue of data privacy, the technology complies with Health Insurance Portability and Accountability Act (HIPAA) requirements and it does not associate any names, emails, or phone numbers with the collected images i.e. screening results are provided directly to the original source of the data.

POTENTIAL APPLICATIONS

This technology can be applied for use in the following areas:

- Pre-screening prior to seeking medical attention at a primary care facility
- Self-serviced recovery monitoring (post-treatment)
- Preventive/predictive healthcare
- Telemedicine/remote health monitoring

Additionally, the technology is also applicable for the detection and identification of certain visible dermatological conditions and oncological conditions.

UNIQUE VALUE PROPOSITION

- First in the world application of AI techniques to assist in male STD screening
- Highly accurate models
- Low-latency screening - results returned within 3 seconds
- Built-in AI explainability presented through heatmaps which increases the confidence level of the end-user

The technology owner is keen to work with universities, research institutes, medical institutions, clinics and digital healthcare providers to testbed the technology and provide additional data that will improve the accuracy of the CNN model.