

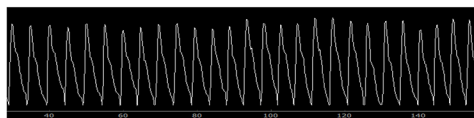
Artificial Intelligence Enabled Wearable TCM Pulse Analyser for Heart Failure Detection

Technology Overview

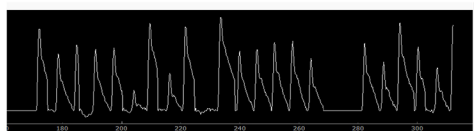
In Singapore, local hospitals face a pressing need for accurate heart failure (HF) diagnosis. While electrocardiograms (ECGs) are commonly used, their low specificity raises concerns about misdiagnosis. Traditional Chinese Medicine (TCM) pulse diagnosis, though ancient, lacks objectivity. To address this, a TCM pulse analyser with AI capabilities has been developed. This innovation aims to aid clinicians, particularly non-cardiologists, in making accurate HF diagnoses, potentially saving critical time and preventing HF from worsening to life-threatening stages, including sudden death.

Features & Specifications

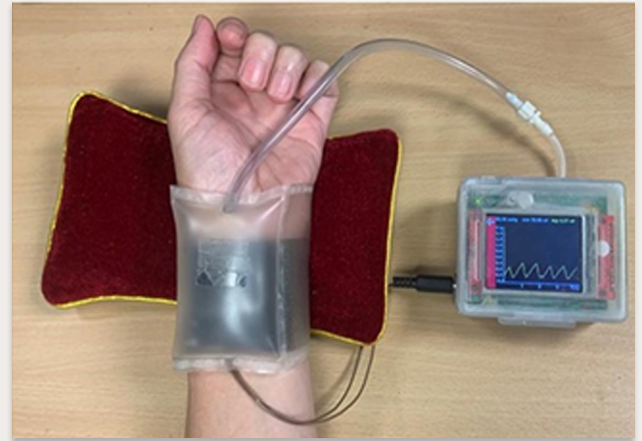
This TCM pulse analyser can accurately collect, record, and analyse human wrist pulse signal by using a novel microfluidic pressure sensor, which can help health-conscious people to monitor their health condition by using AI technology. It can collect TCM pulse signal from different depth position Fu (浮), Zhong (中), Chen (沉) on human wrist according to TCM theory. This TCM pulse analyser is also enabled with pulse pattern feature extraction, selection, and classification models or algorithm using AI approaches based on TCM theory, which can directly give some information and suggestions based on the pulse signal. Quantitatively, the TCM pulse analyser has shown a remarkable accuracy rate of 91% in diagnosing HF patients.



Healthy volunteer TCM pulse signal i.e. normal pulse signal.



Heart failure patient TCM pulse signal, typical Jie Mai (结脉).



Customer Benefits

The TCM pulse analyser has shown a remarkable accuracy rate of 91% in diagnosing HF patients. This high level of accuracy reduces the risk of misdiagnosis and ensures that patients receive appropriate treatment promptly. This innovative wearable TCM pulse analyser represents a significant advancement in the field of non-invasive heart failure management. By combining Traditional Chinese Medicine with modern technology, we have created a device that empowers individuals to take charge of their health and well-being. The accurate diagnosis provided by the TCM pulse analyser, along with its user-friendly interface, contributes to improved patient outcomes and a better quality of life.

Potential Applications

The developed wearable TCM pulse analyser will be a viable healthcare product for health conscious consumers and people with a high risk of heart failure or other cardiovascular disease. This TCM pulse analyser can also help TCM doctors' capabilities on diagnosis and monitoring of cardiovascular disease, hypertension, diabetes, and cirrhosis disease, including some sub-health condition.

Collaborators

- National Heart Centre Singapore
- National University of Singapore