

# Perceptron-based EMG Processor for Neuropathy and Myopathy Diagnosis



Health & Wellness

Computer/AI/Data Processing and Information Technology

## Opportunity

The current practice in diagnosing neuromuscular diseases is a lengthy process involving a series of diagnostic tests including MRI, ultrasound, EMG, and muscle biopsy. It requires extensive assessments due to the similarity of symptoms between different neuromuscular diseases such as myopathy and neuropathy. Despite the current practice being thorough, it is time-consuming, invasive, and may cause discomfort to the patient. Therefore, the opportunity lies in the invention of a non-invasive, comfortable, and quicker point-of-care diagnosis hardware, integrated with a smart feature extracting and classifying algorithm, to improve the diagnostic process and patient outcomes.

## Technology

The invention is a hardware tool for differentiating between two neuromuscular diseases. It uses a feature extractor to interpret electrodiagnostic data from a patient and extract features from it. These extracted features are then passed to a classifier, a layer machine-learning perceptron trained with patient data, which performs a binary classification to delineate the specific neuromuscular disease. This integrated, intelligent, and automated approach combines patient data with machine learning to provide precise and quick diagnosis, improving patient convenience and treatment efficacy.

## Advantages

- **Faster Diagnosis:** Enhances patient experience by providing a quicker and more accurate diagnosis.
- **Non-invasive:** Reduces discomfort and risks associated with invasive diagnostic techniques.
- **Improved Accuracy:** Utilizes machine learning to enhance the accuracy of diagnosis.
- **Data-Driven:** Employs patient data for a personalized diagnosis.
- **Simplified Process:** Streamlines the meticulous process of diagnosing neuromuscular

## Applications

- **Use in Hospitals:** A vital diagnostic tool in neurological departments.

**IP Status**  
Patent filed

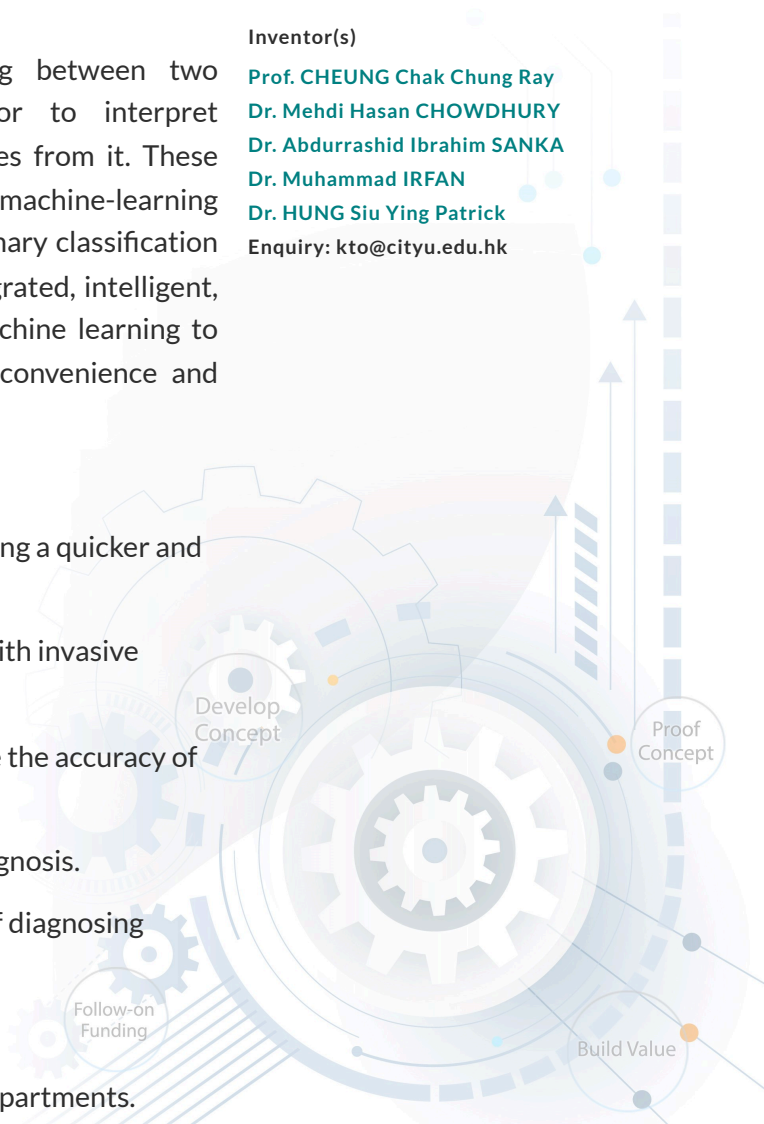


Technology Readiness  
Level (TRL) ?

3

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- Application in Sports Medicine: Useful for athletes experiencing neuromuscular symptoms.
- Research Purposes: Empowers research in neuromuscular diseases and machine learning.
- Home Care: Provides home-based diagnostic solution for patients with mobility issues.
- Telemedicine: Extends the reach of healthcare to remote areas by being integrated into telehealth platforms.

