TECH OFFER

A Smart Insole for Prevention of Diabetic Foot Ulceration

KEY INFORMATION

TECHNOLOGY CATEGORY:

Healthcare - Diagnostics

Healthcare - Medical Devices

Healthcare - Telehealth, Medical Software & Imaging

Electronics - Sensors & Instrumentation

TECHNOLOGY READINESS LEVEL (TRL): **TRL8**

COUNTRY: **THAILAND**

ID NUMBER: **TO175012**

OVERVIEW

High blood sugar in diabetes can gradually block blood vessels, reducing blood flow to the feet and leading to foot ulcers caused by pressure, nerve issues, and poor circulation. Traditionally, these problems are detected with the monofilament test, but it is not preventive and can miss early signs of ulceration. We offer two innovative technologies for real-time diabetic foot monitoring:

1. A high-resolution sensor pad has 2,500 pressure sensors to monitor underfoot pressure accurately in a static position.

2. A smart insole, designed for real-time monitoring, alerts users to potential ulcer risks by detecting high- pressure areas. It not only provides alerts but also offers guidance on reducing pressure.

Both these technologies can be an affordable alternative and incredibly user-friendly. By taking a proactive approach to diabetic foot care, the technology providers hope to prevent the development of foot ulcers and related complications, positively impacting the lives of millions worldwide.

TECHNOLOGY FEATURES & SPECIFICATIONS

This cutting-edge technology, features a smart insole with eight pressure sensors, enabling real-time pressure monitoring in the foot. This data is seamlessly transmitted via Bluetooth to a smartphone app and then to the cloud for comprehensive analysis. The smart insole alerts users to high-pressure areas and recommends actions to prevent ulceration.

We collaborate with different hospitals, rehabilitation clinics, and specialized shoe stores, using our smart insole to collect valuable data from actual patients. By harnessing the power of machine learning and consulting with expert medical professionals, we proactively detect issues early and provide customized solutions to enhance diabetic foot care.

POTENTIAL APPLICATIONS

The primary application for this technology is for Diabetic Foot Ulcer Prevention where the smart insole proactively prevents diabetic foot ulcers by monitoring and alerting to high-pressure areas. Nevertheless there are other potential technology application areas as listed below:

1. Fall Risk Prediction for Older adults: Predicts and prevents falls in older adults through real-time monitoring.
2. Injury Risk Analysis: Assesses and mitigates injury risks for various activities, providing injury prevention insights.
3. Rehabilitation Support: Aids in rehabilitation by tracking progress and offering data-driven training insights.
4. Sports Performance Monitoring: Enhances sports performance by monitoring activity and offering tailored recommendations (like Golf, Running).
5. Custom Shoe Recommendations: Recommends ideal footwear by analyzing foot pressure data for perfect fit and comfort.

MARKET TRENDS & OPPORTUNITIES

Diabetes is one of the major causes of amputation, blindness, stroke, end-stage renal failure, kidney failure, and heart attacks in this region. According to the International Diabetes Federation, ~66 million people were suffering from diabetes in Europe in 2017. The number is expected to increase to ~81 million by 2045. The global foot ulcer sensors markets size is valued at 159.52 million in 2022 and is predicted to reach 211.86 million by the year 2031 at a 3.3% CAGR during the forecast persion for 2023-2031. Foot ulcers are a common complication of diabetes and peripheral artery disease that, if neglected can result in catastrophic illness like amputations. Diabetes causes nerve damage over time and due to the lack of sensitivity patients cannot feel bruising or cuts on their feet. The mortality rate associated with Diabetic Foot Ulcers is ~5% in the first 12 months and increases up to 42% by the end of 5 years.

UNIQUE VALUE PROPOSITION

This smart insole technology monitors underfoot pressure in real-time and alerts users to prevent ulcers in diabetic foot. It also works for fall and injury risk analysis for elderly people.It can be combined with a high-resolution sensor pad technology that monitors underfoot pressure in a static position The key differentiators are the affordability, easy of use, and the effectiveness in preventing a serious health problem which affects millions of diabetic patients worldwide.