Polaris: Lifestyle Guide for Diabetes

Tech ID: 30403 / UC Case 2018-832-0

BRIEF DESCRIPTION

Researchers at UCI have developed a comprehensive platform, Polaris, for personalized diabetes management. By combining standard blood glucose monitoring with activity tracking, Polaris provides users with real-time suggestions that encourage treatment adherence and promote healthy behaviors to better mitigate their symptoms.

SUGGESTED USES

·An interactive smartphone application for diabetic patients

FEATURES/BENEFITS

·Unobtrusive, continuous, objective: The underlying app allows for all data (from both smartphones and wearable devices) to be monitored continuously and without any direct input from the user. As all data collection is done automatically, the information cannot be misrepresented or misreported by the patient – it is entirely objective.

·Personalized: Personal guidance is provided based on the personal model built directly from user data.

·Easily integrated: The platform can be integrated with medical record systems to provide healthcare providers with access and insight into patients' real-world behavior.

FULL DESCRIPTION

Diabetes affects an estimated 415 million people (nearly 1 in 11 adults) globally, a number that is expected to increase by >50% over the next 20 years. About 90-95% of these cases are specifically Type 2 diabetes, which arises from the body's inability to produce and/or use insulin. Though researchers believe some genetic factors may contribute to its development, known risk factors for Type 2 diabetes include excess weight and physical inactivity. If left untreated, patients are susceptible to glaucoma, nerve and renal damage, and heart failure. Despite its severity, there is currently no cure for Type 2 diabetes. Instead, it is often mitigated through lifestyle factors such as weight management, nutrition plans, and exercise regimens. For the majority of the population, however, such lifestyle changes are often drastic and difficult to sustain in the long term. Additionally, even patients who strictly adhere to their treatment plans often experience inexplicable blood sugar spikes throughout the day. Currently, patients must self-report external factors, such as stress levels or food intake, during or after these glucose spikes to help identify their causes. In addition to being cumbersome for the patient, such self-reporting methods are often highly subjective and inaccurate.

To this end, researchers at UCI have developed a comprehensive diabetes management platform which aims to provide automatic, personalized, and continuous diabetes management strategies for patients. The system, called Polaris, consists of a smartphone application which is linked with other wearable devices, such as a continuous glucose monitor and FitBit. Polaris uses data automatically collected from a user's smartphone, such as food intake, sleep, and ambient light/noise, and correlates them with glucose and physical activity readings from the other devices. These trends are used to build a personalized model for each user, which allows Polaris to provide patients with real-time suggestions customized to their unique behavior. In addition to helping users adhere to the treatment plans laid out by their healthcare providers,

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OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
  - » Devices
  - » Disease: Metabolic/Endocrinology
  - » Software
- » **Engineering**
  - » Other

RELATED CASES

2018-832-0, 2018-228-0

Polaris also encourages positive behavioral changes by providing constant, continuous, and long-term support for diabetic patients.

STATE OF DEVELOPMENT

Prototype in development.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,594,315	02/28/2023	2018-228
Patent Cooperation Treaty	Reference for National Filings	2020/005822	01/02/2020	2018-832

Additional Patent Pending

RELATED TECHNOLOGIES

- Automatic Personal Daily Activity Tracking

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