Universal Patient Monitoring

Tech ID: 33214 / UC Case 2021-574-0

BACKGROUND

Sensor-based patient monitoring is a promising approach to assess risk, which can then be used by healthcare clinics to focus efforts on the highest-risk patients without having to spend the time manually assessing risk. For example, pressure ulcers/injuries are localized damage to the skin and/or underlying tissue that usually occur over a bony prominence and are most common to develop in individuals who have low-mobility, such as those who are bedridden or confined to a wheelchair and consequently are attributed to some combination of pressure, friction, shear force, temperature, humidity, and restriction of blood flow and are more prevalent in patients with chronic health problems. Sensor-based patient monitoring can be tuned to the individual based on the relative sensor readings. However, existing sensor-based monitoring techniques, such as pressure monitoring, are one-off solutions that are not supported by a comprehensive system which integrates sensing, data collection, storage, data analysis, and visualization. While traditional monitoring solutions are suitable for its intended purpose, these approaches require substantial re-programming as the suites of monitoring sensors change over time.

TECHNOLOGY DESCRIPTION

To help address this problem, investigators at UC Santa Cruz (UCSC) have researched and developed Monitoring and Prevention (MAP), a unique approach to improved patient monitoring that insulates major functionality from device dependence. The system includes a sensing module, storage module, analysis module, and visualization module, and is designed to be a relatively low-cost, patient-centric framework. It easily integrates with a variety of sensors (custom and off-the-shelf), analytics, and visualization. MAP persistently and autonomously monitors factors that can cause pressure injury occurrence, and automatically detect environments favorable to certain conditions or indications, such as pressure injury formation. MAP is designed to give visual feedback on which areas are at risk and alerts medical healthcare staff accordingly. UCSC's approach was to make MAP simpler than existing technologies, and for improved efficiency, flexibility, and robustness. In addition to pressure monitoring, MAP could be effectively be deployed for blood flow monitoring, skin integrity monitoring, as well as visual monitoring systems using cameras.

APPLICATIONS

- Healthcare

ADVANTAGES

- More efficient, flexible, and robust than one-off tech
- Comprehensive end-to-end framework
- Integrates common patient monitoring workflow
- Cloud- or edge-based deployment options

INTELLECTUAL PROPERTY INFORMATION

Country	Type	Number	Dated	Case
United States Of America	Published Application	20220157455	05/19/2022	2021-574

RELATED MATERIALS

- Rangarajan S, Lee Y, Johnson V, Schorger K, Lee H, Nguyen D, Behfar MH, Jansson E, Rekilä J, Hiltunen J, Vin E. A Novel IoT System For Patient-Centric Pressure Ulcer Prevention Using Sensor Embedded Dressings. In2022 IEEE International Conference on

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OTHER INFORMATION

CATEGORIZED AS

- **Computer**
  - Software
- **Medical**
  - Devices
  - Diagnostics
  - Rehabilitation
- **Sensors & Instrumentation**
  - Medical

RELATED CASES

2021-574-0

Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops) 2022 Mar 21 (pp. 42-45). IEEE. - 03/21/2022

▶ Mansfield S, Vin E, Obraczka K. An IoT System for Autonomous, Continuous, Real-Time Patient Monitoring and Its Application to Pressure Injury Management. In2021 IEEE International Conference on Digital Health (ICDH) 2021 Sep 5 (pp. 91-102). IEEE. - 09/05/2021

▶ Software

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