

Prior Art Search Report

Literature Search	Proposed Work	Comparison with related Journal/Conference papers				
		1 st paper	2 nd paper	3 rd paper	4 th paper	5 th paper
Paper details (Author(s), title, journal/conference name, vol, no, pages, year)	Predictive Modeling of Heat Stress Patterns and Hotspot Identification using Machine Learning and Environmental Data	R. B. Venugopal and R. Dudhe, "IoT Based Advanced Heat Stroke Alarm System," in <i>Proceedings of 2nd IEEE International Conference on Computational Intelligence and Knowledge Economy, ICCIKE 2021</i> , Institute of Electrical and Electronics Engineers Inc., pp. 457–462, 2021,	T. W. Son, D. A. Ramli, and A. A. Aziz, "Wearable heat stroke detection system in IoT-based environment," in <i>Procedia Computer Science</i> , Elsevier B.V., pp. 3686–3695, 2021,	S. Javed, S. Ghazala, and U. Faseeha, "Perspectives of Heat Stroke Shield: An IoT based Solution for the Detection and Preliminary Treatment of Heat Stroke," 2020. [Online].	V. Karmani et al., "Towards Self-Aware Heatstroke Early-Warning System Based on Healthcare IoT," <i>Third World Conference on Smart Trends in Systems, Security and Sustainability (WorldS4)</i> , 2019, pp. 59-63,	S. S. Lin, C. W. Lan, H. Y. Hsu, and S. T. Chen, "Data analytics of a wearable device for heat stroke detection," <i>Sensors</i> (Switzerland), vol. 18, no. 12, Dec. 2018,
What is the functionality (or use) of each invention?	Prediction method for heat stress using IoT sensors.	IoT-based advanced heat stroke alarm system.	Wristband for detecting heat stroke.	Wristband IoT device to detect heat stroke.	Hand glove IoT device for heatstroke early-warning system.	Wearable IoT device for heat stroke detection.
How does each invention operate?	Collecting data using IoT devices (Arduino Nano 33 BLE Sense, heartrate sensor, infrared thermometer, environment temperature and humidity sensor).	Monitoring body temperature and sending reminders via GSM/GPS module.	Collecting data using wristband with sensors (Arduino Nano, heartrate sensor, body temperature sensor, environment temperature and humidity sensor).	Collecting data using wristband IoT device with sensors (Arduino Nano, body temperature sensor, blood oxygen level sensor, environmental temperature and humidity sensor).	Collecting data using hand glove IoT device with sensors.	Collecting data using wearable IoT device with sensors.
What are the major or essential features of each invention?	IoT sensors, data collection, machine learning algorithm, data analysis and validation.	Arduino Uno, body temperature sensor, GPS/GSM module.	Wristband, Arduino Nano, heartrate sensor, body temperature sensor, environment temperature and humidity sensor.	Wristband IoT device, Arduino Nano, body temperature sensor, blood oxygen level sensor, environmental temperature and humidity sensor.	Hand glove IoT device, Arduino board, body temperature sensor, pulse sensor, breath sensor.	Wearable IoT device, LoRa technology, physiological and environmental data collection.
What are the new features in each invention, which are not found elsewhere?	Neural Network for predicting heat-related illness, use of Isolation Forest and K-means algorithm for data labeling in the dataset.	Advance heat stroke alarm system with GPS/GSM module.	Comparison and analysis of various sensors' outputs to assess the impact of heat wave.	Integration of various sensors (body temperature, blood oxygen level, environmental temperature and humidity) with GSM/GPRS module for alert messages to caretakers.	Hand glove IoT device for heatstroke early-warning.	Wearable IoT device for heat stroke detection using LoRa technology.
What are the advantages of each invention?	Prediction of heat-related illness risk, hidden pattern discovery in data, increased accuracy of data labeling using Isolation Forest and K-means algorithm.	Early detection and alert system, user and family members notification for increased body temperature.	Assessment of impact of heat wave, detection of heat stroke risk.	Early detection and alert system, caretaker notification through mobile messages.	Early-warning system for heatstroke, real-time monitoring and alert system.	Warning display based on heat stroke risk.
What are the drawbacks of each invention?	Sensitivity of Sensors	Not Disclosed	Microcontroller Board	Limited Parameters	Not Disclosed	Not Disclosed