The digital fabric | Photo source Anna Gittelson/Roni Cnaani

Innovation > Computing & Tech > Digital fabric that can collect, store and process data

DIGITAL FABRIC THAT CAN COLLECT, STORE AND PROCESS DATA

🇺🇸 COMPUTING & TECH

The fabric can also record body temperature data to understand the relationship between the sweat data and different physical activities

Spotted: A group of MIT scientists have designed the first-ever digital fabric fibre that can store and process information.

The team, led by Yoel Fink, created electronic fibres that were able to write, store and read information, including a 767-kilobit fully-colour short movie file and a 0.48-megabyte music file — both of which could be stored for 48 days without power.

To achieve this, the team placed hundreds of silicon digital chips into a casting preform, incorporating them into a polymer fibre. The result was a thread measuring tens of metres long, with hundreds of interspersed digital chips throughout and a continuous electrical connection.

The ultra-thin fibre can be passed through the eye of a regular needle. They also utilised a neural network made up of 1,650 connections that allowed them to incorporate artificial intelligence. As for durability, it can survive at least 10 washing cycles without breaking down.

To demonstrate the functionality of their digital fibre, the scientist sewed it into the armpit of a shirt. The system collected 270 minutes of body temperature data on the wearer and could draw inferences from the relationship between the data provided by sweat various physical activities in which the user engages. With some training, it was also able to identify which activity they were engaging in with 96 per cent accuracy.

Written By: Katrina Lane

Explore more: Computing & Tech Innovations | Science Innovations

9th June 2021
Email: yoel@mit.edu
Website: mit-pbg.mit.edu

Takeaway:

Smart, digitalised fabrics could be used for longer-term health monitoring. For example, they could collect data on the body to recognise early signs of disease, such as an irregular heartbeat or respiratory decline. This development is the first advance of a fabric that is able to store and process data digitally and even be programmed, according to MIT researchers.

9th June 2021
Email: yoel@mit.edu
Website: mit-pbg.mit.edu