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11/09/2020

Smart Textiles

Smart textiles are textiles that think for themselves, these textiles also react fast on their

own through environmental conditions. Smart textiles in my understanding are the combination

of technologies and fashion. Smart textiles are developed with technologies to provide value to

the people who are wearing the textile, I also believe that smart textiles are to monitor people's

health and to also measure their movements. They are different types of smart textiles, smart

textiles, passive smart textiles and active smart textiles. I will be going more in depth about all

these smart textiles and giving examples of how they each function in their own ways.

Passive smart textiles sense stimuli in the environment. Passive smart textiles are the

first generation textiles and they cannot be controlled by the user. This textile is monitored by

the body temperature according to the external conditions. Active smart textiles may or may not

require a microprocessor active smart textiles are second generation. Active smart textiles are

those that adapt and change their functionality in response to changes in the external

environment or in response to a user input , be it motion or weather. These textiles may change

shape, store and regulate heat, as well as other functions for example if you are wearing an active

smart full-sleeve shirt and it senses that your body temperature is higher than normal it will roll

up your sleeves for you. Smart textiles do the similar things as passive smart textiles, this textile

alse responds and adapts to their environment. For example clothing that can change color to

produce camouflage effects for protection was developed by the US army in collaboration with various industrial firms to meet military requirements.Smart textiles find applications in a plethora of fields. Depending on their use, smart fabrics are created by fusing together fibers and technology. These fibers include conductive yarns and polymers, shape memory polymers, encapsulated phase change materials, fiber optics, and other small electronics.

An example of smart textiles are the jump bikes(figure1) Jumpbike is a rental company owned by Uber. These jump bikes have swappable lithium-ion batteries, fancy new displays, retractable mounts for smartphones, and cable locks in the rear. In total, these new features are meant to make Uber's Jump e-bikes more resilient, easier to use, and less in need of constant repairs. They were designed in a way to help Uber grow and scale its bike-share program.The swappable battery is perhaps the most game-changing feature. Jump distinguishes itself from other bike-share services by operating a fleet of solely electric-powered "pedal assist" bikes. (Others offer only human-powered bikes or a mix of both.) The batteries provide a boost while you pedal — up to 20 mph — but if you stop pedaling, the bike slows just like a regular bike. Users can locate and unlock the bikes using an app on their smartphone (Hawkins,2018). I can see why these bikes are game changer because you do not need to know to ride a bike to ride them, they will literally do the work for you and will get you to your destination faster.

An example of active smart textile can be the apple watch series 6 (figure2). The Apple Watch has been constantly evolving since it was launched in 2015. More than 33 million Apple Watches have been sold since then, making it the single most successful watch in the world.Five years is a long time in terms of technology and since 2015, Apple has released a new watch annually. The design has been refined and the features have certainly become more and more advanced.The Apple Watch has health and fitness at the core, but that's not all it does. So, let's

dive into its history. Apple watch series 6 is expected to be to maintain Apple's reign as the most popular smartwatch manufacturer on earth. Adding to the excitement is the release of a new iPhone model alongside with the watch. This series was released to improve gym stats, people will be able to tell if they are behind their goal targets and there'll be more accurate heart rate monitoring during exercise. Apple has worked hard to create a new programme "Apple Connected" which will see a community of Apple-watch connected pieces of equipment work together to create a reward programme for Apple Watch wearers.There's talk of monitoring for people who need to manage their diabetes via blood glucose and pressure sensors.

It's predicted that there will be some improvements to the design, which is long-awaited at this point. This is important in a lot of cases because it is not an ordinary watch. It is a watch that will help you be in shape and will also help you be connected and knowledgeable about what is happening around you.

An example of passive smart textiles are wearables(figure3). Most wearable technologies are accessories like smartwatches, smart glasses or fitness trackers. Those gadgets typically offer internet connectivity and accompany dedicated apps that help wearers get even more from the products. The wearables have sensors and other electronic components that often send data to the apps and give people trackable metrics or additional helpful information.On the other hand, smart clothes have electronics sewn directly into the fabrics. Instead of getting dressed for the day and making sure to also strap on a wearable item, people can choose high-tech apparel featuring tech components existing in the material. Much like the care tag sewn into the back of a T-shirt, smart clothes have parts that people barely or don't notice.

Many people have clothes with tags printed directly onto the fabric instead of existing separately from it. A research team at the Korea Institute of Science and Technology took a similar approach by making a transistor that has a fiber structure. They created it by twisting electrodes to adjust the thread length and thickness of the semiconductor. The conductor achieves currents at over 1,000 times higher than current transistors and doesn't bother the wearer.

In the future maybe 5 to 10 years I see a lot of things changing in the world that are we leaving in today I believe many if not everything will be technologically advanced owned and it kind of worries me that humans will not be same we won't be doing a lot of things on our own which I believe will make us more lazy.

Figure 1

Figure 2

figure3

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