SRUSHTI

HOW YOUR WEARING CAN CHANGE THE WAY YOU LIVE!
THE IMPACT AND FUTURE OF **WEARABLE TECHNOLOGY**.

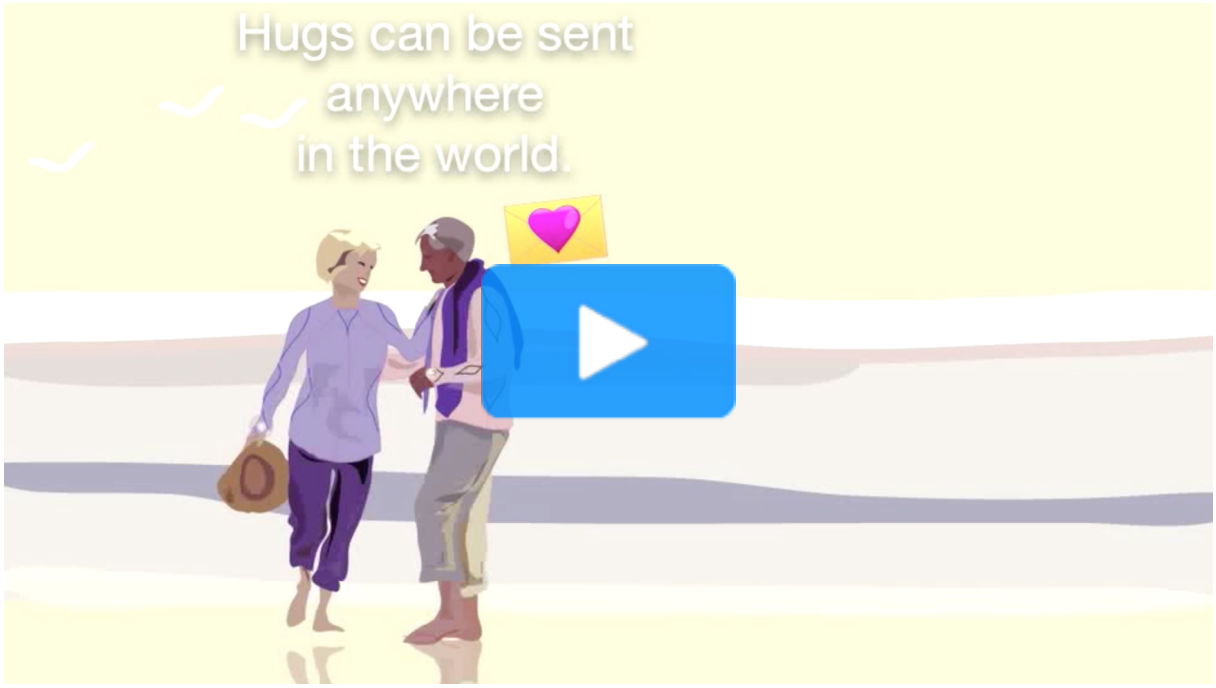
SCI-FI IS REAL!

Remember the Arnold Schwarzenegger cyborg who could easily make a readout of information before his eyes in the 'Terminator'. Back when we watched it the first time, we were spellbindingly awed because it did seem like a thing from the future. If you remember, there is an interesting conversation in the film between the characters Kyle Reese and Sarah O Connor. When Kyle explains about the Robot that is chasing them, Sarah responds that she is not stupid and human beings "cannot make things like that yet". Reese replies "Not for about 40 years". Terminator was released in 1984. One would have to admit James Cameron was spot on with his prediction! Today, devices that can give you an augmented reality overlay of information are catching up the market. You can go about your daily life with the benefit of information popping up in the field of your vision and you don't have to be a robot to experience it. Yes, in other words, the transition is a flash forward from Terminator to Iron Man! What is one cool thing about Tony Stark aka Iron Man. He is equipped with machines; isn't he? Devices form his dress! And using them he can access information regarding any object or person before him. Though not upto the level of making an entire outfit, very soon every human being will be equipped with devices that will improve their way of accessing content and information. That is where wearable technology is taking us to.

A Lookback

A study conducted by Forbes in 2014 indicated that 71% of 16 to 24 year olds want wearable technology. The use of wearable devices actually go long way back to the early centuries. The first ever corrective lenses of 13th century, 17th century Abacus Ring and pocket watches, 19th century hearing aids can all be thought of as precursors to the modern wearable technology.

The modern day developments started in 20th century and quite interestingly, pigeons were the first to carry wearable cameras. In 1907, Julius Neubronner, a German pioneer of amateur photography and film strapped a tiny lightweight camera to homing pigeons to obtain aerial images. In 1965, Edward O. Thorp and Claude Shannon, two mathematicians created a computerized timing device to help them win a game of roulette. One timer was hidden in a shoe and the other in a pack of cigarettes. This is considered as one of the earliest examples of wearable electronic devices. One might also wonder if this was an inspiration for cheat code in games! The period of 1970s and 1980s were sensationalized by calculator watch from various brands such as Pulsar, Timex and Casio.



SOURCE : CUTECIRCUIT HUGSHIRT

Panning to the twenty first century, the Fashion company 'CuteCircuit' introduced a bluetooth connected electronics called the 'HugShirt'' at the CyberArt Festival 2004 in Spain. The product, designed for tele transmitting touch over distance was the first wearable product that took the form of a garment of clothing and it was also the world's first Bluetooth and internet connected clothing. No wonder it won

the Grand Prize at the CyberArt and got featured in Time Magazine's 'Best Inventions of the Year' special issue! Later in 2008, Ilya Fridman, a designer launched a bluetooth microphone that could be hidden into a pair of earrings and in 2009 v2_lab introduced an app called Pocket tweet that could turn your shirt into a twitter bubble. If you could make a proper hole and stitch your shirt properly, the java application, as it displays the latest tweet on your mobile can generate a speech bubble on to your pocket and you can literally walk around inviting others to read your chest! You could actually create 'followers' as you walk and that is one impressive way to carry yourself around. (As long as one is not profane!)

SOURCE : HUG SHIRT IN BRAZIL AND THE USA

PRESENT SCENARIO

The term is quite self explanatory but as one can see implications of wearable technology goes far beyond a pair of fancy headphones or digital watch. The motto of the modern era is 'Smart' and so the modern age wearables are loaded with sensors that can connect wirelessly to your smartphone and to you as a person and help you stay organized. Let us have a look at some of such present day wearables and its uses.

SOURCE : SMARTWATCH NAVIGATION

SMARTWATCHES

With a smartwatch you can literally have a computer worn in your wrist. Predominantly, smartwatches can connect to your mobile phone and act as a mini interface to your digital life. Perhaps grandparents of the future will have to tell their young ones that there was once a period when watches were meant for just timekeeping! As smartwatches gain in strength, timekeeping will just be one little part in the ocean of opportunities they provide.

Live Your Social Life - Uninterrupted

How many times have a smartphone interrupted your daily life? You are in a crucial meeting but you receive a notification in your smartphone. You keep wondering if someone has left you an important message or email that requires your immediate attention. You just don't feel comfortable without checking it and you also cannot afford to upset your management. We have all been there, haven't we? Or how often another viewer has told you to put off your cell phone inside a movie hall because that was disturbing him. Let us accept the fact, smartphones are great but every smartphone user would have had at least one experience where it hindered their regular social life. This might look like a small thing to the eye but there is more to it than what meets the eye. You absolutely don't want to make another person think you prefer gadget above them and you don't want to be treated that way too. This is one place where smartwatches can be a significant life saver. You can just peek into your wrist and stay informed without disturbing your regular life.

You don't have to take the phone out of your pocket or stop whatever you were doing to see who texted you. You can just quickly glance at your wrist and decide whether to respond or ignore it. So, with a smartwatch you can easily stay connected and informed without having to interrupt your social life.

Travel Directions And Assistance

Suppose you are travelling from Los Angeles to San Francisco. You are not quite familiar with the easiest route or the different traffic you could expect. Browsing navigational guides in smartphones while driving can be a painful process. First, you need to find a way to place your phone properly, so that you won't have problems viewing it. Even then, it is not very easy to look at the phone screen navigation by keeping your complete attention on the road. Smartwatches change this scenario altogether. With voice recognition features, you can just say "OK Google..Navigate to San Francisco" and turn by turn navigations would appear on your wrist! Similarly, if you are in a new city, you can search for places of attractions or find nearby hotels and restaurants.

Mostly, you need your mobile phone with you for the watch to get directions but GPS built in smartwatches have already hit the market. Apple Watch Series 2, Polar M600, Samsung Gear S2 3G, Garmin Vivoactive and Fitbit Surge are some of the examples in this regard.

Go Hands Free With Voice Commands

One of the unique advantages of smartwatch is that you can ask a question or text someone hands free and on the go! To activate voice search you just have to say "OK Google" and your smartwatch will start listening. Visiting somewhere and want to know what the weather is like? No problem. Just ask 'What is the weather for New Delhi Tomorrow'. If you have to send an email or an instant message using any messenger you don't have to take your smartphone out anymore. Just speak into your smartwatch and what you say will be converted to a text that you can send. You can also open any applications you want by simply giving a voice command after 'OK Google' and you can also setup reminders.

SMARTWATCH

SOURCE : HOW TO USE VOICE CONTROL ON THE MOTO 360 SMARTWATCH I O2 GURU TV

Instant Alerts

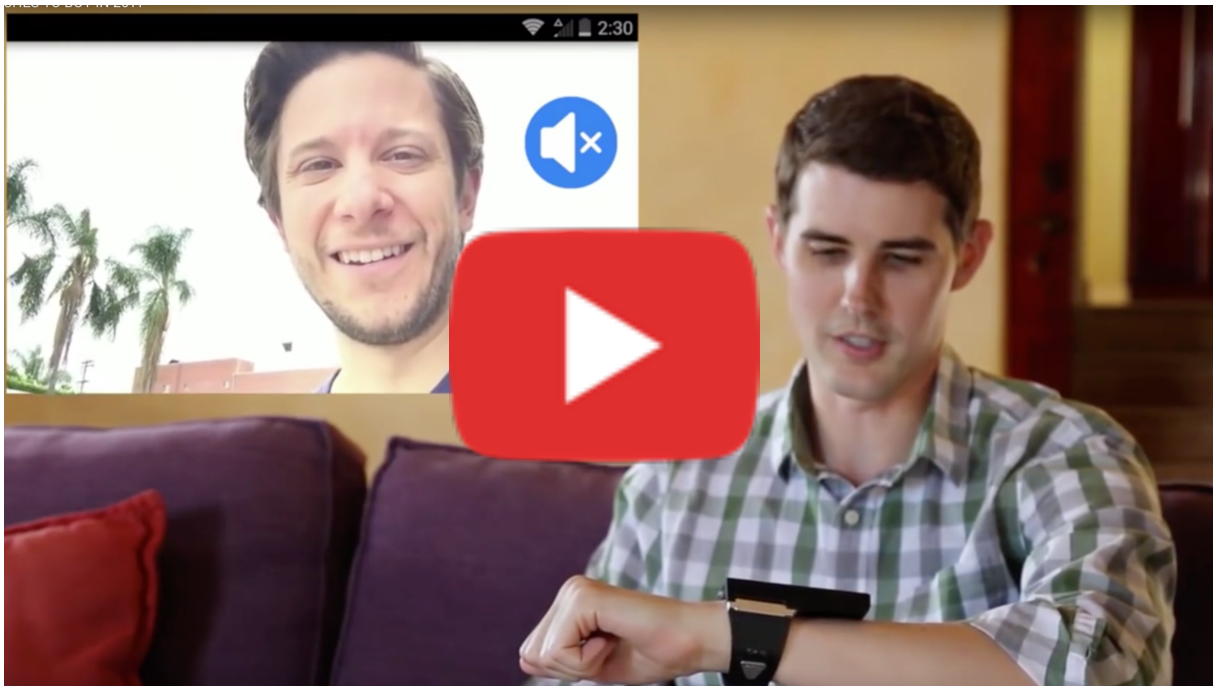
The Google Assistant 'Google Now' has introduced Google Now 'Cards' where your information is automatically organized into simple cards to appear when required. Simply log in and modify settings to determine what information do you need and when do you need them without having to manually search for it. Thus, you can receive regular alerts and updates onto your wrist. Sometimes, it can even provide you information that you never realized you needed. For example, by calculating weather, location and traffic it can inform you when to start from your home to catch your flight or to attend that meeting.

Your wrist as the platform for instant alerts and updates. How about that!

SOURCE : PLAY MUSIC DIRECTLY ON AN ANDROID WEAR SMART WATCH (LEAVE YOUR PHONE AT HOME)

Music, Shop, Book And Much More!

Android Wear, the operating system for wearable devices is characterized by plenty of beautiful applications. You can simply download the apps from Play store and customize your smartwatch to listen to music, shop or even book flights. You can also use your smartwatch as a remote to play music and videos in your mobile and you can play the music in your watch using a bluetooth speaker or headset. You can even keep a track of your steps and calculate the distance travelled. At the Spring Forward event in 2015, Tim Cook, the CEO of Apple, demonstrated the process of Apple watch being used to clear the airport security by generating the boarding pass on watch screen! One can easily obtain the boarding pass with seat, gate assignment and barcode on your watch screen. Several airlines such as Air France have already started developing apps to work with Apple watch. Very soon you might be able to board the flight with a flick of the wrist.



SOURCE : SMARTWATCHES TO BUY IN 2017

Connectivity And Internet Of Things

The latest version of Android Wear allows you to connect your phone with the smartwatch even if they are far away. If the watch is connected to a wifi network and the phone to a wifi or cell network, you can still send messages and access email on your smartwatch. In the present era of Internet of things, a smartwatch can also help you control your sound system or the smart lighting system with an easy click on the wrist.

Major Players

Apple's series 2 watches arrive with a smoother body and it is swimming friendly, has a battery that lasts two days and also a heart rate monitor. L.G Watch Sport has GPS, LTE, NFC, heart rate monitor and Android Pay. Samsung's Gear S3 runs on both iOS and Android and it features increased battery life, GPS and heart rate monitor. Withings Steel HR is a hybrid smartwatch that has an analogue watch face. In the face is a hidden figure that will flash notifications and display steps. It also has a built in heart rate monitor and battery could last upto 25 days.

FITNESS TRACKERS

As the name implies, fitness trackers help to monitor and track fitness metrics such as distance, calorie consumption, heartbeat, quality of sleep etc. While there are smartwatches that serve as fitness trackers, there are wearable devices exclusively for keeping a track of physical health as well. Let us see how it monitors our fitness and help us stay healthy.

Sensors

Quite simply, fitness trackers measure motion. Present day wearables contain a 3 axis accelerometer which monitors movement in every direction. Some of them have gyroscope too which helps to measure orientation and rotation. If you go on hiking a mountain or climb stairs up and down, the altimeter in fitness trackers can read the altitude. All of such data is collected to generate an overall reading and with more sensors on your tracker, you can obtain a very accurate reading. The sensors can recognize the intensity, acceleration, frequency, duration and patterns of your movement which helps the tracker identify if you are walking down the road or just saying hello to someone you know. Maybe they can catch your anxiety when you greet your crush or try to ask her out! Oops..

The Jawbone UP3 is one of the trackers packed with sensors. Along with temperature sensor and accelerometer, they also have a bioimpedance sensor. Bioimpedance sensors are equipped with four electrodes that are helpful in measuring the resistance of your skin to a tiny electric current. Fitbit Charge 2 use optical sensors to cast light onto your skin and measure your pulse through it. This lights up your capillaries and the sensor could measure the rate at which blood is being pumped.

Algorithm

Different devices use different algorithm to derive information out of raw data and none of the algorithms used by manufacturers are publicly available at the moment. To measure calories, an application needs more than steps, which is why it asks you to specify age, gender, height and weight too. Along with the steps, a tracker has to add details like heart rate and how much you are perspiring into the algorithm to accurately measure the calories you are burning. One of the most popular tracking platform available is 'MotionX', developed by Fullpower Technologies. Philippe Kahn, the CEO of MotionX explained the process of cleaning up data to provide quality information by pointing out the example of cleaning up a poorly recorded tape of a music concert. The tape captures all the sound that surrounds you. The chatter, foot tapping, interactions etc. So, if you have to convert this to a quality recording of music, you will have to get rid of all the needless sounds. The quality of such cleaning up will differ from tracker to tracker depending upon the algorithm and kind of sensors they use. Fullpower Technologies have more than 100 specialist engineers dedicated to improve the accuracy and efficiency of its software and they have also invested more than 50 million dollars to develop next generation algorithms!

Apps

Android Wear, the operating system for wearable devices is characterized by plenty of beautiful applications. You can simply download the apps from Play store and customize your smartwatch to listen to music, shop or even book flights. You can also use your smartwatch as a remote to play music and videos in your mobile and you can play the music in your watch using a bluetooth speaker or headset. You can even keep a track of your steps and calculate the distance travelled. At the Spring Forward event in 2015, Tim Cook, the CEO of Apple, demonstrated the process of Apple watch being used to clear the airport security by generating the boarding pass on watch screen!

One can easily obtain the boarding pass with seat, gate assignment and barcode on your watch screen. Several airlines such as Air France have already started developing apps to work with Apple watch. Very soon you might be able to board the flight with a flick of the wrist.

Major Players

Garmin VivoSmart HR+ won the Fitness Tracker of the Year at Wearable Tech Awards 2016. They offer wide variety of activities and provide GPS tracking, heart rate and around a week of battery life. Fitbit Charge 2 offers resting heart rate and even maximal oxygen consumption (VO2 max). They also provide breathing training to assist in stress relief.

Misfit Ray calculates step and sleep and also alerts you about calls and messages from a paired smartphone. Ray uses three axis accelerometer to calculate calorie burning and also tracks activities such as cycling, swimming, dancing and yoga.

SMART CLOTHING

We have seen how devices attached to your wrist and arms can provide you with information that can improve the way you live. Now, what if you are not that comfortable carrying around devices in you. Would you like it if your clothes provide all that data! Smart clothing or E-textiles constitute of fabrics that allow digital components and electronics to be implanted on them. Smart clothing is a very broad term and many experts consider that as the future of wearable technology. So, let us see how beneficial they are.

Fitness And Health Care

It is predicted that in the future, many of the features in fitness trackers will be available on smart garments. One of the biggest advantages in garments is that they broaden the area of the body that can be monitored which in turn provides richer biometric data. This means that tracking can go beyond motion and heart rate to even respiration rate. HexoSkin and OmSignal have designed outfits with breathing rate sensors that show you how your lungs are working! This helps to improve your level of fitness awareness and how long you should rest before going on workload again. Additionally, the data accuracy in smart clothing will be significantly higher than in wearables that occupy your wrist. This is simply because the sensors in the cloth moves closer to the areas that it needs to monitor. The majority of smart shirts and tops make use of EKG heart rate monitoring technology and a smart dress on your lower body with motion sensors can actually track the body part which makes most of the movement when you run.

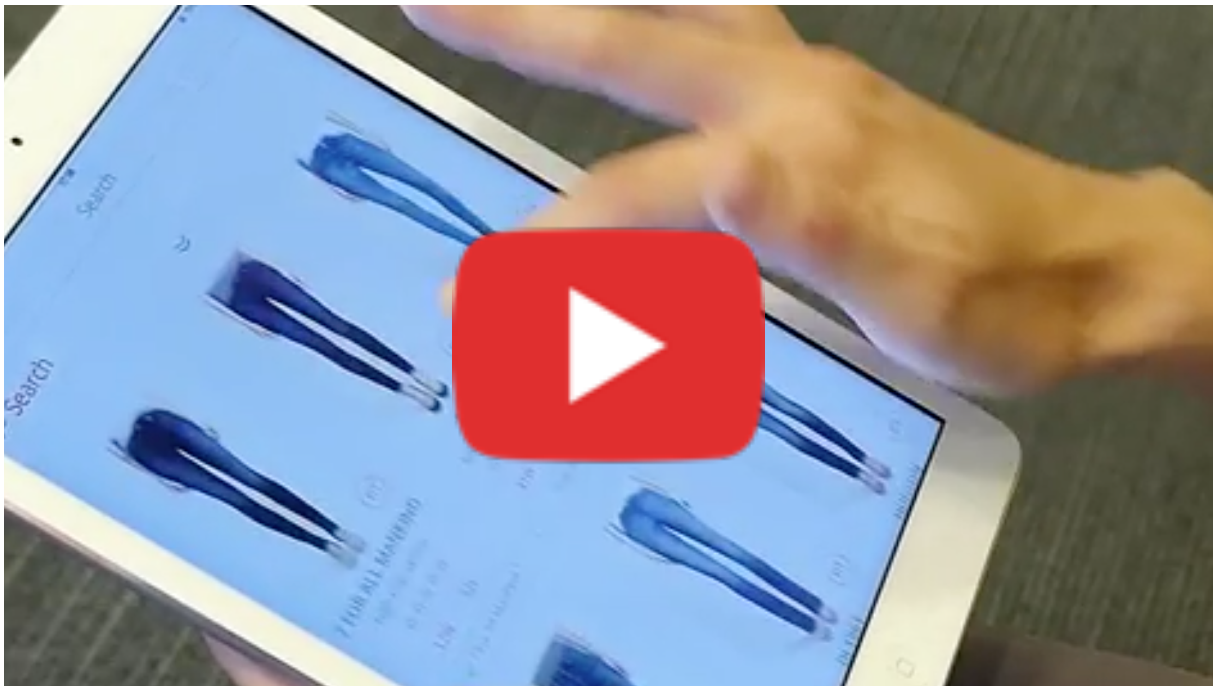
The noninvasive method called Pulse Oximetry is used in most hospitals to monitor a person's oxygen saturation. The same method is used in Owlet Smart Sock, a smart garment designed for babies. The socks can be smoothly fit into the foot and it tracks the baby's heart rate and oxygen levels.

This data is then communicated to your phone and it will notify you if something doesn't look right! Heart disease is the leading cause of death for women in the United States. It was reported that in 2013 alone, 289,758 women died due to heart disease in U.S. Keeping this in mind, Bloomer Tech has launched a smart Bra to help women improve their cardiac health. Fitted with flexible materials and washable circuits, this device tracks electrocardiogram signals from the heart and sends them to your phone or your physician.

Fuseproject and Superflex has collaborated to work on a powered clothing prototype which could be a huge benefit for elderly people. This superflex suit is housed by motors in hexagonal pods that add muscle power and thereby reduces the effort from wearer to make the movement. Thus, elderly and differently abled people can walk, sit, stand up from a chair, stay upright or move up and down the stairs! Physical limitations or drawbacks may not be a concern at all in the near future.

Makes Shopping Easier

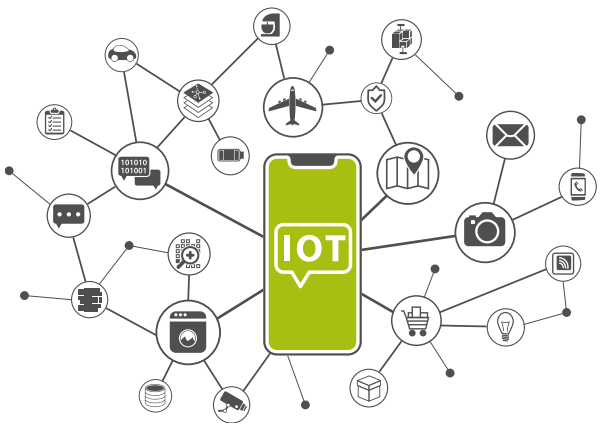
LikeAGlove has introduced intelligent leggings that can measure the wearer's shape in seconds. Thus, the next time you make an online purchase, you don't have to filter across various brands, sizes or shapes. Their application will automatically figure out the best brands, models and sizes that suit you. So, if you have added or burned weight or have improved your height or any other physical features, you don't have to be confused on what to buy. The smart leggings will do it for you.



SOURCE : SMART LEGGINGS

Work Safety

Researchers from Royal Melbourne Institute of Technology and Commonwealth Scientific and Industrial Research Organisation developed a personal safety system monitor that alerts if a mine worker's clothing or safety equipment is incorrectly worn or malfunctioning. The system works by embedding sensors on all their protective equipments such as safety glasses, helmets, boots and it can even determine if they are worn the right way or not. Additionally, they also consider the qualification and experience of workers as well as the dynamic nature of mining enterprise using an advanced system of iOT sensors and wireless technology. Thus, a virtual barrier surrounds every individual worker and if it is crossed, an alert will be triggered to the designated smartphone! Intelligent clothing might well be the future of work safety.



Military and Defence

Intelligent Textiles based in UK developed an e-jacket that could reduce the weight carried by foot soldiers by labour saving the number of batteries they carry. The main challenge for foot soldiers is that they have to carry around 60 AA batteries to charge all the equipment they carry.

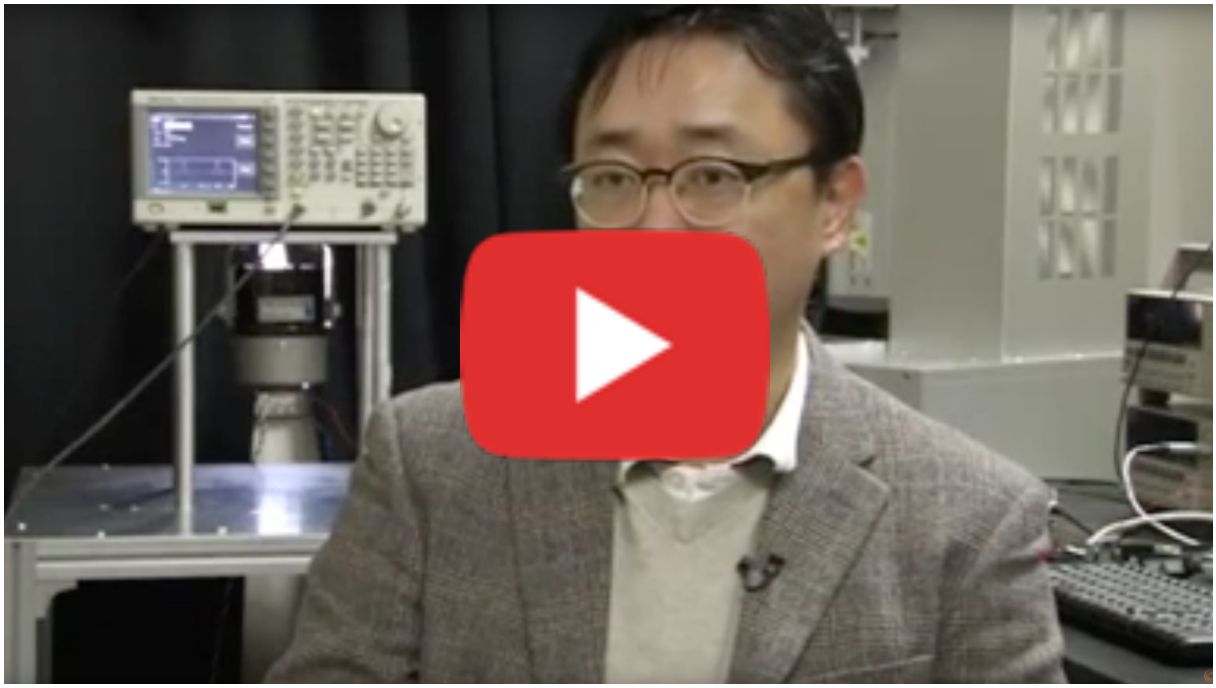
It is difficult for them to analyse what charge those batteries are at and they are very heavy too. Furthermore, wires and cables run around the system and a soldier could face dangers like getting caught on door handles and branches while on a mission. To reduce this risk, Intelligent Textiles developed a fabric wiring system that covered the soldier's vest, helmet and backpack. The uniform was then transformed into a power and data distribution system equipped with only a single battery pack. This eliminated the use of trailing wires and the need to spend considerable time at the end of day to check if the cells have to be replaced. The system also provides soldiers with an electromagnetic screening that helps them stay hidden from enemy troops while wearing the uniform. The system can track the position and status of soldiers in action and if the wearer is shot, it can determine the bullet's impact and send a radio message back to the base.

SOURCE : INTELLIGENT TEXTILES - REDUCING THE WEIGHT BURDEN OF SOLDIERS

So the vehicle's interaction with the soldier, soldier's communication with peripherals, communication devices and base are all completely joined up.

Electricity

A team of researchers in South Korea, led by Professor Kim Sang-Woo of School of Advanced Materials Science and Engineering developed a smart fabric that could generate electricity to power wearable devices. This is a triboelectric nanogenerator and it can be used to power wide variety of gadgets. The idea behind this research was to use static electricity as an energy source. The resistance between silver coated textile layers and organic polymer film is what generates electricity. With this device, LED, LCD and low power devices like sensors can be powered without any external power source. Professor Sang-Woo says that in the future, the sensors could be attached to human skin and the fabric could well be a stand alone power source for those sensors!



SOURCE : SMART FABRIC GENERATES ELECTRICITY

Major Players

Apart from Owlet Smart Sock, Like A Glove and Bloomer Tech that we saw earlier, one of the most important players in smart clothing is Athos. They are an expensive medical tech designed exclusively for gym enthusiasts. Its micro EMG sensors can determine which of your muscles are working and then relay this information onto a smartphone. Google's Project Jacquard has launched Levi's Commuter Trucker Jacket that has touch and gesture sensors on the jacket sleeve. Users can play music, access maps or even make or dismiss calls without even reaching for the phone. Samsung has introduced an NFC smart suit using which the wearer can unlock their phone, swap business card digitally or even set gadgets to office and drive modes. Samsung also has a Body Compass workout Shirt that monitors biometric data and a golf shirt that includes weather and UV rating monitoring.

SMART JEWELLERY

The idea behind smartwatches are being vastly brought into jewellery items which has broadened the scope of wearable technology.

Let us see some of the important features and players of smart jewellery.

Ringly - For quick and easy notifications

Ringly can be considered as the pioneer of smart jewellery. The cocktail ring can alert you about activities on your phone from calls to reminder schedules. Four vibration patterns and five colours can be synced and you can easily be notified about texts, calls, social media updates or even about Uber drivers around you. You can also customize the alerts that you would like to receive.

Senstone - Wearable Voice Recorder

A wonderful idea has just struck you. But you are in the middle of a crowd and it won't be easy for you to take your mobile out and note it. You wait till you reach a comfortable state. When you do reach there, Alas! You forgot what was in your mind. Has this ever been a problem for you? If so Senstone wearable voice recorder might well be the solution you are looking for.

Senstone allows you to record voice memos on the go which is then translated and organised into an app. They can be worn as a bracelet or necklace. So, even if you are in a meeting or social gathering you don't have to worry about being impolite to note what's on your mind.

Cuff - For Safety and Emergency

Cuff Smart necklaces and bracelets allow you to call your friends for help if you have an emergency. So, if you are stuck at an odd place at an odd timing, you just have to press the Cuff for 2-3 seconds which will send an alert to a group of people you have chosen. They can spot your location through GPS and coordinate to ensure your safety. They also have bluetooth that connects to your phone so that you can be notified about the texts, calls and emails that you receive.

Bellabeat Leaf - Sleep and Stress Monitoring

Bellabeat Leaf Urban can determine the breathing levels and the app will tell you how prepared you are for the day. They can also help women keep a track of their menstrual cycles and assist them during ovulation periods. Additionally, they also provide step and sleep monitoring.

Simulate Body Temperature using Wristify Bracelet

How do you normally make your body comfortable during the peak of summer or winter. You normally change the temperature level of your entire premise or building, don't you? Now, what if you could carry around a device that can provide instant temperature solution! That is what a group of MIT students are trying to achieve using the all new Wristify Bracelet. Using a thermoelectric material, this device, instantly cools or heats the temperature on your body. What this means is, even if you are out of your building, the climate outside might not be a problem for you. You can simply connect the device to your body and feel comfortable!

THE PROMISING FUTURE

As the name implies, fitness trackers help to monitor and track fitness metrics such as distance, calorie consumption, heartbeat, quality of sleep etc. While there are smartwatches that serve as fitness trackers, there are wearable devices exclusively for keeping a track of physical health as well. Let us see how it monitors our fitness and help us stay healthy.

IMPLANTABLE WEARABLES

All of the wearables we saw until now exist outside our body. You have to fix or attach them to wrist, arm or some part of your body. But, what if they could reside inside your own body! What if technology is implanted onto your body. Many experts consider this as the biggest leap in wearable technology. Let us take a look at some of the implantable wearables that could soon be a part of our life.

Implantable Smartphones!

In a recent experiment, Researchers of 'AutoDesk', embedded touch sensors, LEDs, speakers and vibration motors under the skin of a corpse's arm. The researchers claim that traditional interactive features could well work through skin and the data obtained through their study could well be used for future interactive implants. For further studies, they used artificial skin to attach small implants to volunteers' arms and then tested how they felt moving around with interactive devices. They also tested the skin effects during typical controls such as buttons and microphones and also went on to study the light quality and sound and vibration.

Quite interestingly, they even communicated and charged devices through Bluetooth! If this becomes a real possibility in the future, we could have smartphones stored inside us! If that happens, your data will also travel with you and you can never forget them. The real and complete possibilities of implanted smartphones can only be known when it gets popular but experts are of the opinion that phones and other devices can be implanted more directly to the nervous system and this would significantly enhance the future communication levels!

Cyber Pills

Ever wondered if you forgot to have your medicines? Ever wondered if your medicine is really working for you? The future might just have the solution. A British research team are in the process of developing cyber pills called Proteus that are equipped with microprocessors to help you stay on track. The chip functions by being imbedded into a pill. Just ingest it at the same time as you have your medicine and it will work inside you, recording the time you took your dose. That data travels from your skin to a stick on patch and then to a mobile application. The pills can further chat up with your doctors too. They can text your doctor information related to your medication habit (whether you are consuming it properly) and also if the medicine is working in the desired manner or not.

Smart Dust

Perhaps the most scintillating aspect about the future of wearable technology is Smart Dust. Smart Dust devices are nothing but small wireless microelectromechanical sensors (MEMS) that can detect almost everything from light to vibrations. Nanotechnology is the obvious call of the future and every prospective device is getting tinier. Thus, a Smart Dust too is a tiny dust size device with unbelievable potential.

It consists of nano structured silicon sensor that can instantly assemble, make sense and report on their inhibiting local environment. This involves sensing, computing, wireless communication possibilities and autonomous power supply. In other words, they can be arrays of full computers with antennas, each tinier than a grain of sand that can organize themselves inside the body and empower a range of complex internal mechanisms.

Imagine these devices healing your body from a pain quite instantly. Imagine them attacking cancer at a very early stage. The scope is simply enormous. They could also store critical personal information inside the body in a deeply encrypted manner. In the future, using Smart Dust, doctors will not have to open you up for a surgery. They just have to implant smart dust onto your body and arrive at a solution on screen!

Smart Organs

Suppose you broke your arm playing football. Unfortunately, imagine that neither splint nor surgery were able to fix the fracture. Doctors recommend that you need a bone graft, meaning they have to take bone from elsewhere to fill the gap. Here you have two options. Allow the surgeon to cut bone from another place in your body or get a new bone from a dead person. There is risk involved in both. Bone from another body could carry disease and grafts from your own body can cause painful infections or even nerve damage. But wait. What if you can grow your own bone from your own cells. This is what Dr. Nina Tandon is striving to achieve! 'EpiBone', which has Dr. Nina Tandon as the CEO, is the world's first company growing living human bones for skeletal reconstruction! Nina Tandon has created a massive influence in the world and her impact spreads from children with congenital facial defects to patients with head trauma. Nina's effect and the technology of implantable smart organs will only improve its scope in the future. Scientists in the future will just have to take certain kind of plastic and add live human cells in the proper structure and medium to make a new bone, tissue or skin. In the near future, even smart liver or cornea will be implanted on to the body. Very soon, we will be able to create tissues for every part of the body!

SMART ORGANS

Suppose you broke your arm playing football. Unfortunately, imagine that neither splint nor surgery were able to fix the fracture. Doctors recommend that you need a bone graft, meaning they have to take bone from elsewhere to fill the gap. Here you have two options. Allow the surgeon to cut bone from another place in your body or get a new bone from a dead person. There is risk involved in both. Bone from another body could carry disease and grafts from your own body can cause painful infections or even nerve damage.

But wait. What if you can grow your own bone from your own cells. This is what Dr. Nina Tandon is striving to achieve! 'EpiBone', which has Dr. Nina Tandon as the CEO, is the world's first company growing living human bones for skeletal reconstruction! Nina Tandon has created a massive influence in the world and her impact spreads from children with congenital facial defects to patients with head trauma. Nina's effect and the technology of implantable smart organs will only improve its scope in the future.

SOURCE : COULD TISSUE ENGINEERING MEAN PERSONALIZED MEDICINE? - NINA TANDON

Scientists in the future will just have to take certain kind of plastic and add live human cells in the proper structure and medium to make a new bone, tissue or skin. In the near future, even smart liver or cornea will be implanted on to the body. Very soon, we will be able to create tissues for every part of the body!

OTHER PRODUCTS

We have seen what promise implantables hold. Now let us see what some of the wearable products have to offer for the future.

Smart Glasses

Coming back to the Terminator kind of an experience, smart glasses can add information alongside anything the wearer sees and together with Augmented Reality, they can do wonders. Suppose you are about to purchase an apartment. With one little click on the glass you can see the complete history that went into the construction of the apartment. The kind of labour work that was involved, the quality of the materials used or even the history of its tenants. Very soon, you will not need anyone vouching for the apartment and you can figure out entire details yourself. Thereby, you can be guaranteed that you are only paying what the apartment is worth for. The advertising and commercial materials that you see in the future will be nothing like you have ever witnessed.

On the outset, it might just be a pictorial figure of the latest car. But, if you use your smart glasses you can see its entire construction history, its performances and you can even select across every minute component in the vehicle and see how it would work. That too on different roads and conditions! What about tourism? Guess guides will be out of work soon. You will not need anyone describing you the things you see in front of yourself. Be it a war the Alexander the Great fought or rituals and traditions of ancient Egypt. You can see it in front of your eyes in real. Imagine, doctors reading your complete medical history by just looking at you and without going through your lifelong medical records. The possibilities are just endless.

Smart Contact Lens

What if you are the sort of person who hates wearing glasses. How would you like smart contact lenses? Sounds like another sci fi right? But it turns out that your eyeballs are the best place to put technology. Smart contact lens that provide you superhuman vision, heads-up displays, video cameras, medical sensors and much more are already in the making. For next generation kids, the superheroes of 20th century and early 21st century movies, might look like average people. Smart lenses can easily be implanted. They don't need a surgery and you can easily remove or insert it whenever you want. They have exposure to both air and the body's internal chemistry and since they are exposed to both mechanical movement of blinking and the light, they can produce energy. Imagine browsing internet, watching live news or even watching a movie right in front of your eyes and on the go. No one else will even know what you are watching. The next generation television, computers and movie hall could well be your own eye!

In the future, smart contact lenses can develop virtual assistants that could understand you much more than anyone else. The assistant will be able to read your smiles, tears and emotions and understand what makes you happy and what gets you disappointed. They will be able to predict your thoughts and intentions and respond accordingly. Imagine, your virtual assistant showing you a list of doctors immediately as you feel uneasy. You might feel it's a small issue but the virtual assistant can tell how bad your condition is and what doctors you could consult. Or imagine your virtual assistant playing your favorite music by reading your mood! Imagine it giving you the list of hotels and menus as soon as you feel hungry. Imagine it showing you the uber cars available just when you wanted to go out. Imagine them giving you the list of tourist spots and flights available just when you think of going on a vacation with your girlfriend. Microchips that can be embedded onto your fingernails can serve as a keyboard for virtual screens and this will allow you to draw in three dimensions and provide instant holographic interaction with your friends.

Smart Clothes

What if your clothes could communicate your mood? The smart clothes of the future could well have sensors fit in that could measure your physiology and screen it to the world around you. So, if you are angry and annoyed, others can read it from your dress and stay away. If you are thinking about applying for a long leave or if you are afraid about communicating an error that you committed to your supervisor, you can easily figure out when he is in the best of his mood and approach him accordingly! Next time you see a girl you like, you could actually check out if she is in the mood to accept your coffee invitation. Your mood garment can even telecast data to your insurers, doctors and friends. So if you meet with any unfortunate accident or if you feel disturbed, the information can be readily transferred to them. Very soon, the buttons in your dress could be GPS enabled and they could even track your movements and learn your habits. This will correspondingly inform all your other devices what you are up to and they can provide suggestions accordingly. For example, your smartphone can automatically display the nearby restaurants, clubs, movie halls, tourist attractions and so on if you are in a new place. In other words, in the future you will never lose your way. In case if you do and the button stops receiving signals, they can instantly alert your friends and family or even call Emergency for help. Additionally, enterprises like Clothing+ have already started developing garments with functional medical applications which allows you to create Virtual Reality Content. This is supposed to be a major leap in transhumanism movement.

Sensors that detect harmful environment

Researchers at MIT has already developed a wearable sensor that can trace amounts of toxic gas. It is made up of a series of carbon nanotubes and it weighs less than a paper. If exposed to toxic gases, they can send an alert to a paired device like a smartphone. This is a perfect aid for soldiers in the battlefield and in the future it will have huge implications in the field of medicine as well.

This would also help to regulate and control our environment as global warming is a growing area of concern. In factories, laboratories and other places, they can detect leakage of gases like hydrogen or other pathogenic gases. This can also be a significant tool for space research as they can provide vital information regarding the atmospheric components of other planets.

Biometrics

Ever since 1970s, governments and private organizations have used biometric technology in identity cards, health cards, visa, passport control and various such services. Today, there are even advanced face and voice recognition patterns. But what if there are smart sensors that could analyse the way you walk, the way you look and even the minute elements of your skin. They can even record your thoughts and an organization can easily spot an intruder. So, in the future, your employer will be able to tell how well do you like doing your job, how dedicated you are and how loyal you are to the firm! In other words, it will be easy to see through you. The same procedure can be put to efficient use in passport, visa and other immigration facilities and this will ensure supreme security.

Smart Homes

How would you like it if you are equipped with a sensor that interconnects all your lights, windows, doors and appliances. How often have you slept forgetting to turn a device or an appliance off. What if there is a smart sensor that lets the device switch off automatically? Similarly, they can notify you about potential dangers any appliance possess and can alert you about the weather forecast. So if there is a rain or a storm approaching, your window will shut down automatically and other devices too will respond accordingly. Suppose you have an old person or a differently abled person or someone suffering from memory loss in your home. Smart homes that have round buttons placed at strategic points would instantly remind the person to follow the series of tasks and would also alert you if a regular routine is not complete.

CONCLUSION

Presently, you carry the world in your hands. With one smartphone, any information from anywhere in the world reach you instantaneously. But, wait. Technology is meant to make life easy and simple. From the discovery of fire by primitive men, that has been the supreme motto behind every innovation. One discovery after the other followed to remove all the obstacles one by one. Today you can carry the world but isn't carrying too a bit tedious? You have to make a sudden pause to your daily life to access content that you carry. Plus, you don't always feel comfortable when you have to take care of another device as you move. How often have you been extra cautious to make sure you don't slip your smartphone. Also, you are confused by the number of devices available for various purposes. The customer always need more and they need it in one device and they want to be highly comfortable as well! Which is why, the future is you wearing the world. With the technology cruising like ever before, very soon you can wear the entire world in you and move around without interrupting a single moment of your daily life!

"If you need help with an upcoming project,
do write to us on hello@srushticreative.com and we'd be glad to help!"

SRUSHTI

www.srushticreative.com