Vishwakarama Government Engineering College

Department of Information Technology

the TECH-TREASURE

Volume:01 - 2020

UNREAL ENGINE

Making Something Unreal.

- Read more on **Page-05**

Lesser Known Indian

Technology Pioneers in Silicon Valley

- Read more on **Page-03**

Fashion & Technology

Technology is changing almost every industry, including fashion. Imagine wearing a computer in the form of clothing, like a jacket. "The word smart is often used to describe actions controlled by a computer"

- Read more on **Page-09**

Sundar Pichai

Everyone should have access to the internet. Proud to partner with @reliancejio to increase access for the hundreds of millions in India who don't own a smartphone with our 1st invest -ment of $4.5B from the #GoogleForIndia Digitization Fund.

- Read more on **Page-02**

Ravi Shankar Prasad

Delighted to announce that India has joined the Global Partnership on Artificial Intelligence or #GPAI today as a founding member. This multi-stakeholder international partnership will promote responsible and human centric development and use of AI. #ResponsibleAI.

- Read more on **Page-01**

India joins GPAI as founding member to support responsible, human-centric development, use of AI

India joins GPAI as founding member to support responsible, human-centric development, use of AI India has joined the Global Partnership on Artificial Intelligence (GPAI) as a founding member to support responsible and human-centric development and use of Artificial Intelligence (AI), an official release said on 15th june. With this, India has joined the league of leading nations and economies including the US, the UK, EU, Australia, Canada, France, Germany, Italy, Japan, Mexico, New Zealand, Republic of Korea, and Singapore for launch of GPAI.

"GPAI is an international and multi-stakeholder initiative to guide the responsible development and use of AI, grounded in human rights, inclusion, diversity, innovation, and economic growth," the release said. The first-of-its-type initiative for evolving better understanding of challenges and opportunities around AI using the experience and diversity of participating countries, the alliance will look to bridge the gap between theory and practice by supporting advanced research and applied activities on AI-related priorities.

"In collaboration with partners and international organisations, GPAI will bring together leading experts from industry, civil society, governments, and academia to collaborate to promote responsible evolution of AI and will also evolve methodologies to show how AI can be leveraged to better respond to the present global crisis around COVID-19," the release added. GPAI will be supported by a Secretariat, to be hosted by the Organisation for Economic Cooperation and Development (OECD) in Paris, as well as by two Centers of Expertise -- one each in Montreal and Paris.

India recently launched National AI Strategy and National AI Portal, and has also started leveraging AI across various sectors such as education, agriculture, healthcare, e-commerce, finance, telecommunications. "By joining GPAI as a founding member, India will actively participate in the global development of Artificial Intelligence, leveraging upon its experience around use of digital technologies for inclusive growth," the release added.

- Jap Hirpara (4th Sem)

Google For INDIA Digitization Fund

Google to invest 10M dollars in india, says CEO sundar pichai

On 13th July, 2020 Google launched its 6th 'Google for India Summit', but it was held virtually for the first time due to corona virus pandemic. India's IT minister Shri Ravi Shankar Prasad and HRD minister Shri Ramesh Pokhriyal were also present in the summit. Various topics which were and will be crucial for development of India were discussed extensively.

" Today, I'm excited to announce the Google for India digitization fund. Through this efforts we will invest 75000 crore INR, into india over next 5-7 years. This is a reflection of our confidence in the future of India and its digital economy."
- Sundar Pichai.

Internet saathis : Indian government launched internet saathis scheme with help of joint conjecture of Google, Intel corporation and Tata trust. By this scheme over 30 million rural women were digitally educated.

Virtual learning : Google Meet, Google Classroom and YouTube had been a boon in this time of pandemic ,as it provides education to the students eliminating the barrier of distance and time.the barrier of distance and time .

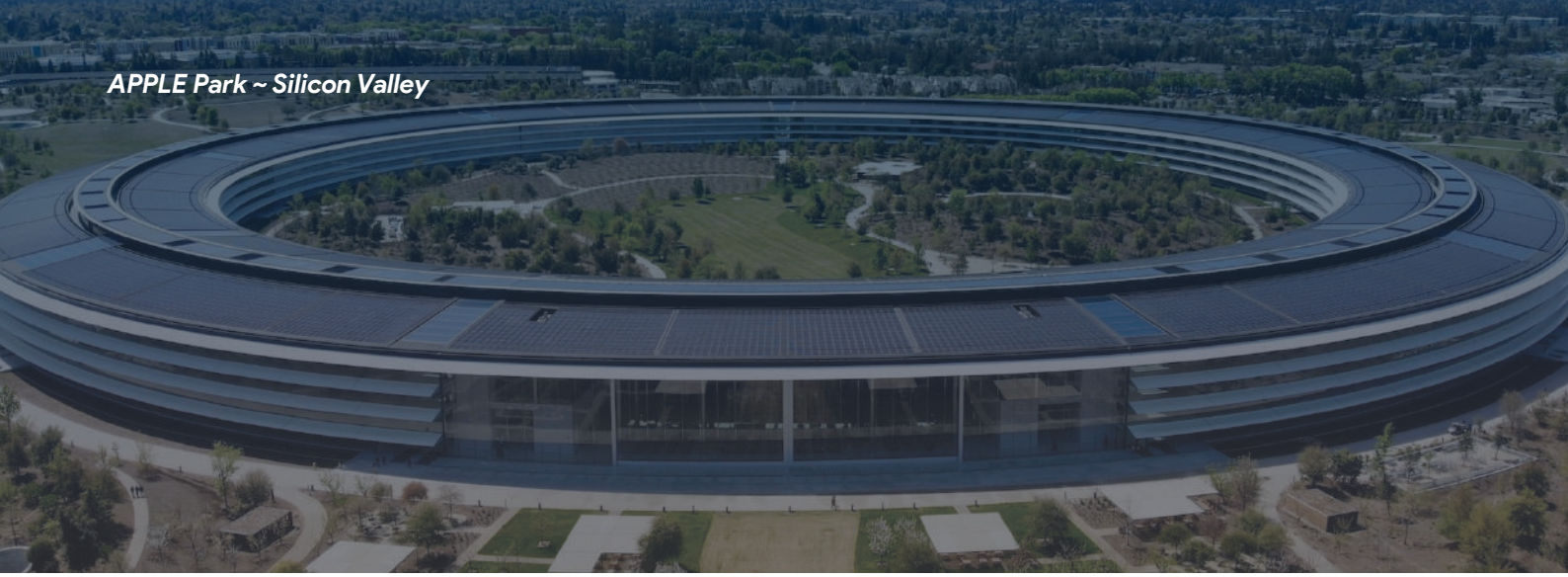
' AI ' for social good : The AI flood forecasting system will help warn and evacuate areas that may get affected by the natural disaster. Also, an AI-powered reading tutor app BOLO aka Read Along to help kids and learn on their own.

Digital infrastructure : Creating world class digital infrastructure to boost quick development for all the important industries of India.

- Jap Hirpara (4th Sem)

"One machine can do the work of fifty ordinary men.
No machine can do the work of one extraordinary man."

- Elbert Hubbard



APPLE Park ~ Silicon Valley

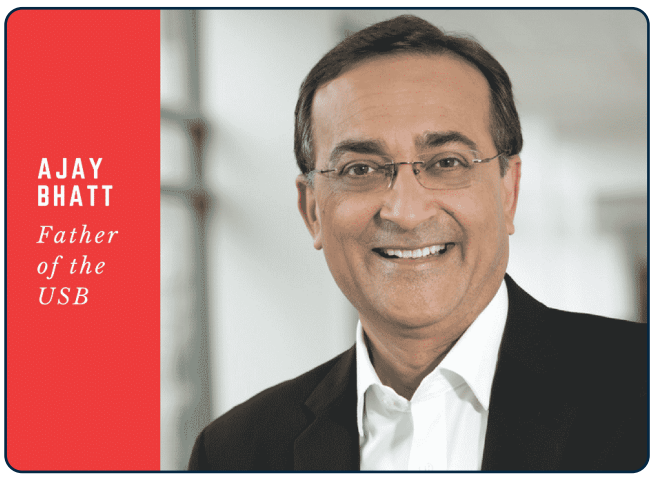
Lesser Known Indian Technology Pioneers in Silicon Valley

Ever since waves of Indian graduates poured into Silicon Valley in Northern California in the 1970s and 1980s, talented Indians have made breakthroughs, pushed boundaries and held positions of power in the world of technology and media. Almost all the big US technology companies have technology pioneers of Indian descent, including the fathers of the USB and technology blogging.

Satya Nadella in February became Microsoft's chief executive, replacing Steve Ballmer, which instantly propelled him into the highest-profile slot, but he is y no means the first Indian to make waves in the technology

- Vaishnavi Barot (4th Sem)

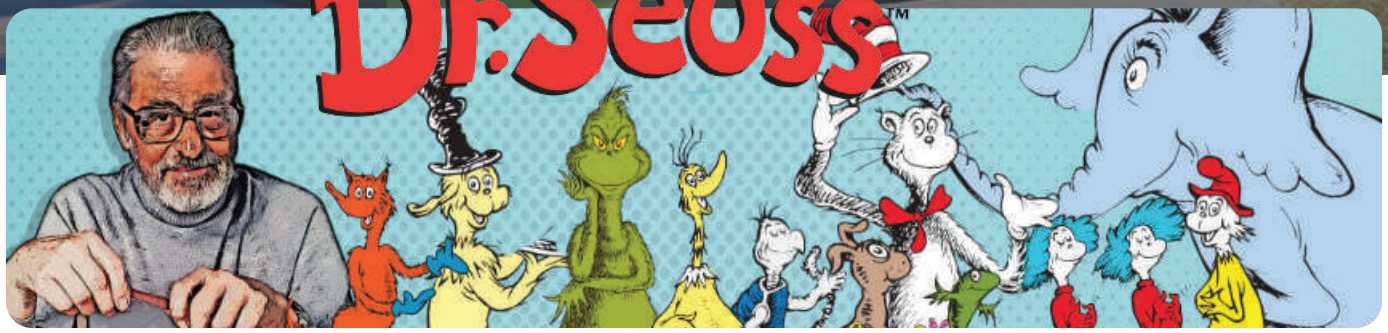
Ajay Bhatt



One of the most unsung technology pioneers is Ajay Bhatt, an IndianAmerican computer architect who is credited as being the father of the USB standard – something that almost every computing device uses today in some form or another.

Born in 1957, Bhatt graduated from Maharaja Sayajirao University of Baroda in India and then went on to receive a master's degree from The City University of New York before joining Intel in 1990. He became Intel's chief client platform architect, but not before co-inventing USB, as well as several other crucial standards in graphics and computer architecture holding 31 US patents.

In recognition for his contribution to the PCI Express standard, which underlies several of the modern computer connection standards including thehigh-speed Thunderbolt connection, Bhatt received an Achievement in Excellence Award in 2002. In 2009, Intel proclaimed Bhatt as a rockstar of tech through a TV advertdespite Bhatt being played by an actor it pushed his profile into the public spotlight.

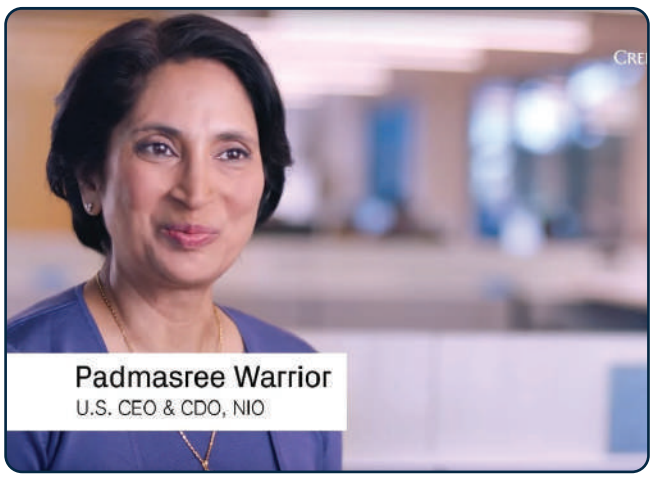


Theodor Seuss "Ted" Geisel was an American children's author, political cartoonist, illustrator, poet, animator, and filmmaker.

" The more that you read,
The more things you will know.
The more that you learn,
The more places you'll go. "

- Dr. Seuss

Padmasree Warrior



Born in 1961 in Vijayawada, India, Padmasree Warrior gained a degree in chemical engineering from the Indian Institute of Technology in Delhi in 1982 before moving to the US and graduating from Cornell University with a masters in chemical engineering.- From Cornell Warrior started her 23-year-career with Motorola in 1984. Starting out as only one of a few women at the company's Arizona facility, she rose through the ranks. Warrior served as general manager of Motorola's Energy Systems Group, as well as chief technology officer of its Semiconductor roducts department and general manager of Thoughtbeam before it was shut down.

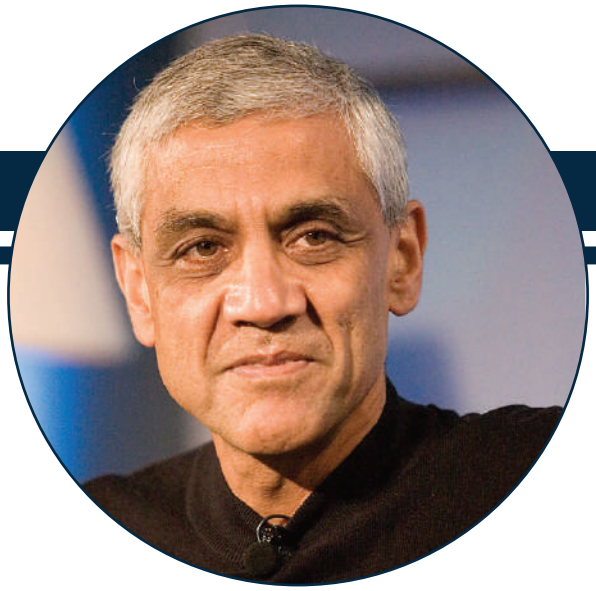
In 2003, Warrior became a senior vice president and Motorola's chief technology officer, before being promoted to executive vice president in 2005.

Under her tenure, Motorola won the National Medal of Technology from the President of the United States for the first time in 2004. Warrior remained chief technology officer at Motorola until 2007, where she left to take over the same role at Cisco Systems, which she holds to this day.

A first look at Unreal Engine 5

Unreal Engine is the world's most open and advanced real-time 3D creation tool. Continuously evolving to serve not only its original purpose as a state-of-the-art game engine, today it gives creators across industries the freedom and control to deliver cutting-edge content, interactive experiences, and immersive virtual worlds.

History: Unreal Engine 4 which is a special game engine platform developed by Epic games . This platform is completely based on C++ and offers realistic graphics to the audience . Epic games company firstly introduced Unreal Engine in 1998.
The Unreal Engine features a high degree of portability, supporting a wide range of platforms. It is the latest release of Unreal Engine series which was launched in 2014.Then in 2015 the Company Epic Games allowed every developer to use this platform (open source) for more and more games and softwares.The source code is available on GitHub.



Vinod Khosla

Born in 1955 in Delhi, India, Khosla was inspired into a career in technology by reading about the founding of Intel in 1968 at the age of 14. He gained a degree in electrical engineering from IIT-Delhi before moving to the US to obtain a masters in biomedical engineering from Carnegie Mellon University and a masters from the Stanford Graduate School of Business in 1980.
In 1980, leaving academia, Khosla joined electronic design automation company Daisy Systems before leaving in 1982 to co-found Sun Microsystems along with Stanford alumni Scott McNealy and Andy Bechtolsheim, as well as Bill Joy. There Khosla served as Sun's chief executive until 1984. Khosla joined Kleiner Perkins Caufield & Byers, a venture capital firm, as a general partner in 1987 investing in technology firms and Indian finance companies. Khosla then left the company in 2004 to start his own venture capitalist firm, Khosla Ventures, which manages around $1bn of investment capital and invests in clean technology and information technology start-ups.

Features: Unreal Engine is a complete suite of development tools for anyone working with real-time technology. From design visualizations and cinematic experiences to high-quality games across PC, console, mobile, VR, and AR, Unreal Engine gives you everything you need to start, ship, grow, and stand out from the crowd.

There are features including Pipeline Integration, World Building, Animation, Rendering, Lighting and Materials, Siulation and Effects, Gameplay and Interactivity Authoring, Integrated Media Support and On-set Tools, Content Development and many more...

They offer developer tools like Full access to C++ source code, Seamless Perforce integration, Profiling and performance and C++ API. This is supported in more than 23 platforms like Microsoft Windows, macOS, Linux, HTML5, iOS,Android and many more, There are more than 40 games and infrastructures built on it like PUBG and so on and there is more to do with it.

Unreal Engine 5 is comming soon...

- Abhi Shah (4th Sem)

Ruchi Sanghvi

India's software talent in big US companies is not limited to search. Born in 1982 in Pune, India, Ruchi Sanghvi became Facebook's first female engineer, joining the social network in 2005. Sanghvi moved to the US and gained a bachelors and masters degree in electrical computer engineering at Carnegie Mellon University in 2004. She worked at Oracle before breaking the male-dominated engineering mould by joining Facebook in 2005.

At Facebook Sanghvi was one of the primary engineers working on the first iteration of what was set to become the mainstay of Facebook, the News Feed. It was launched in 2006, but Sanghvi and team were rebuked by users and critics alike for its privacy implications. That lead her and her team to a 48- hour coding session, rapidly creating the first iteration of Facebook's complicated privacy controls.

Later that year, Sanghvi was made a principal product manager at Facebook, overseeing the company's software platform as well as the News Feed, but left Facebook in 2010.

> " If I don't ask for something,
> I am not going to get it "
> - Ruchi Sanghvi

In 2011, Sanghvi co-founded a collaboration startup called Cove along with another Indian Facebook engineer and Carnegie Mellon University alumniAditya Agarwal. File syncing service Dropbox announced in 2012 that it had acquired Cove, which led to Sanghvi joining the company, where she is currently the vice president of operations.

What is CES? : CES is the most influential tech event in the world — the proving ground for breakthrough technologies and global innovators. This is where the world's biggest brands do business and meet new partners, and the sharpest innovators hit the stage.

The best of CES2020 are as followed

Best Start up - Hydraloop

The Hydraloop is not only a charming bit of modern home decor but also a highly sophisticated water-purification system. Once installed in your home, it takes in outgoing wastewater and uses six widely accepted treatment methods to sterilize the water, which can then be reused in toilets, washing machines, pools and even in the garden. The best part? Hydraloop's founder claims an average family of four stands to save tens of thousands of gallons of water per year, which should be just as good for your wallet as it is for the planet.

Best Laptop – ASUS ROG

ASUS ROG Zephyrus G14 isn't the most powerful gaming laptop at CES 2020, but it's a combination of a smaller 14-inch design and AMD's newly introduced Ryzen 4000 H-series chips. The Zephyrus G14 promises to be the perfect balance of a laptop : high-end gaming specs with a top-notch RTX 2060 GPU and plenty of RAM for when you want to game. But it also has a design that looks normal enough to use at an office, promises 10-plus hours of battery life, and can charge off a standard 60W USB-C PD brick when you're on the go. The icing on the cake? A retro-cool dot-matrix display built into the lid that you can use to display the time, animated GIFs, or whatever else you can think of.

NextMind ~ Brain Sensing Device: NextMind is a neurotechnology start up developing a ground-breaking, non-invasive, AI-based brain-computer interface geared to the mass market. It can develop a brain-computer interface that translates signals from the virtual cortex into digital commands. It lets you input commands into computers and VR/AR headsets with your visual attention. As its tagline says What You Think Is What You Do. The NextMind can decode your thoughts and send back the information to a computer in real-time. Allowing you to control digital devices directly with your brain.

- Mihir Someshwara (4th Sem)

Fashion & Technology

Introduction to CNT structures

Elemental carbon can form different structures in the sp2 hybridization. These bonds are stronger than the sp3 bonds and provide nanotubes with their unique strength. Although various carbon cages were studied, it was only in 1991, when Lijima observed for the first time tubular carbon structures. Nanotubes are members of the fullerene structural family. Nanotubes are classified as single-walled nanotubes (SWNT) and multi-walled nanotubes (MWNT).

A single-walled carbon nanotube can be pictured as a rolled graphene sheet. Multi-walled nanotubes can be pictured as a set of concentric single-walled nanotubes differing from them in their properties. CNTs have unique electrical properties, heat conduction efficiency, stability and resilience and extraordinary strength. Cause of the carbon–carbon sp2 bonding in CNT, they have high stiffness and axial strength and nanotubes are the stiffest known fiber, with a 1.4 TPa Young's modulus. CNT thermal properties are directly related to their unique structure and small size and they are ideal materials for thermal management studying.

CNT and it's nanocomposites in textile

Carbon nanostructures such as carbon nanotubes have wide range of potential applications and attracted great interest due to their unique anisotropic properties. CNT could cover a wide range of textile functions which is reviewed here.

It's a conundrum that all-weather athletes often face, simply because it's a tough problem to solve. It is relatively easy to find performance athletic gear made from fabrics that are marketed with "cooling action" or "enhanced breathing," designed to keep you cool when temperatures heat up. For colder climates, there is ample gear made from fabricsdesigned to trap your body heat from escaping, with fancy marketing terms like "HeatGear" or "OmniHeat." For now, however, it is extremely difficult to find a fabric that can do both—but that may soon change. Researchers at the University of Maryland recently reported in Science that they have developed a carbon-nanotube-coated fabric that is the first of its kind to seamlessly transition between keeping you warm in the cold and cool in the heat. No battery packs, switches, or controls required to stay comfortable—the fabric automatically reacts to your body's physiology. Coated with carbon nanotubes (a conductive material), the fibers within this fabric harness electromagnetic interactions between the coatings to control how heat passes through the fabric—all automatically, depending on condition of the skin underneath.

"Just like an automated window blind, our fabric can adaptively regulate thermal radiation in response to your personal comfort," YuHuang Wang, professor in the Department of Chemistry and Biochemistry at the University of Maryland, told Digital Trends. "We achieve this new functionality by engineering the fabric at the fiber level, making it a 'switchable' or dynamically responsive system."

The yarn responsible for the new textile is created using fibers made of two different synthetic materials. One of these absorbs water, while the other one repels it. The strands are coated with conductive carbon nanotubes. As a result of materials in the fibers both resisting and absorbing water, they warp when exposed to humidity, such as a sweating body. This distortion opens pores in the fabric, creating a cooling effect. It also modifies the electromagnetic coupling between the carbon nanotubes in the coating — which either blocks or allows infrared radiation to travel through. Before people are even aware that they are getting too warm, their clothing will be cooling them down. If the person cools down too much, the same mechanism will trap in heat.

Introduction to CNT structures

Underneath the carbon nanotube-coating, the fabric developed by University of Maryland researchers consists of fibers containing two very different materials: triacetate and cellulose, fibers already used in the commercial textile industry.Whereas triacetate is water-repelling (hydrophobic), cellulose is water-absorbing (hydrophilic)—making these fibers interestingly bimorphic.The team coated triacetate-cellulose bimorph fibers with carbon nanotubes in "a process similar to solution dyeing," the authors write in their paper. Then, they bundled these fibers into strands of yarn and wove the strands together into a fabric to test its performance.

Their results show that, because the fibers are bimorphic, humidity makes them twist and contract. So, when skin is warm and humid, the fibers compact together, opening up pores between strands of the fabric. Infrared radiation can then escape through those pores, causing a cooling effect. But that's only part of the story—the compacted fibers also allow the carbon nanotubes to interact with one another, inducing resonant electromagnetic coupling that further permits heat exchange.

"You can think of this coupling effect like the bending of a radio antenna to change the wavelength or frequency it resonates with," Wang says in the university press release. "It's a very simplified way to think of it, but imagine bringing two antennae close together to regulate the kind of electromagnetic wave they pick up. When the fibers are brought closer together, the radiation they interact with changes. In clothing, that means the fabric interacts with the heat radiating from the human body."

When conditions are cool and dry, however, the opposite happens—the fibers expand away from one other, changing the carbon nanotubes' electromagnetic interactions and closing between-strand pores, preventing the body's infrared radiation from escaping through the fabric.These small, local changes between fibers permit the fabric to breathe by slightly opening or closing pores between strands without causing large-scale deformations within the fabric—allowing one piece of clothing to adapt to diverse environments.

The next big thing in Textile Industry

It has proven difficult to construct materials, such as fabrics or films that demonstrate these properties on centimetre or metre scales. The challenge stems from the difficulty of assembling and weaving CNTs since they are so small, and their geometry is very hard to control.

Controlling the body's exchange of infrared radiation is one go-to strategy for activewear—an industry that will reach a predicted global market value of almost $550 billion by 2024—whether preventing loss of body heat in colder conditions or enhancing its flow in warmer conditions. Carbon nanotubes, if used appropriately, are safe and we are using a form that happens to be inexpensive, relatively speaking. It's potentially a more affordable thermoelectric material that could be used next to the skin.

- Shruti Jain (4th Sem)

Thank you

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