

HEALTH + BEHAVIOR

Neuroscientist harnesses the power of virtual reality to unlock the mysteries of memory

UCLA lab first to study how the brain encodes memory during movement



Mashable

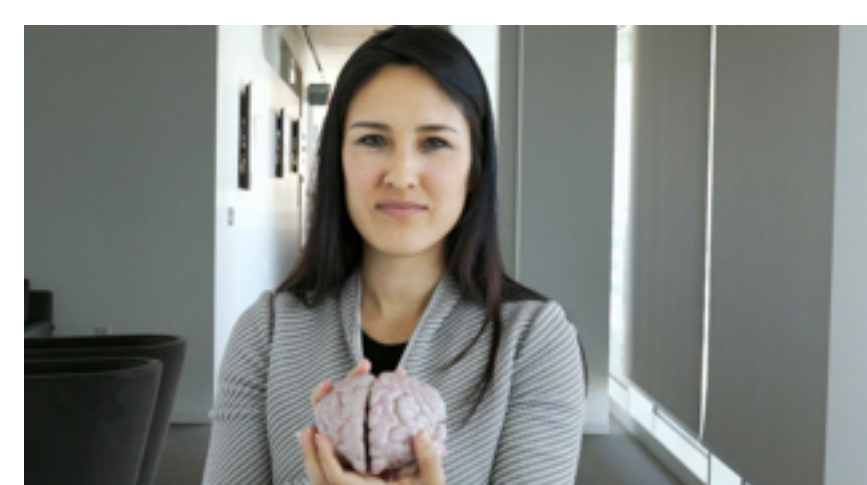
UCLA researchers are the first to blend virtual reality with a surgically implanted prosthesis to reveal what happens in the brain when people create memories.

Elaine Schmidt
August 30, 2017

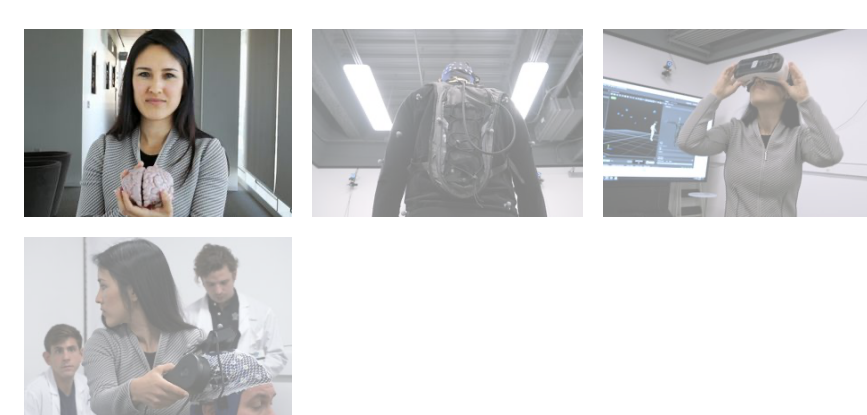
Share

More Images

Click image for full description and download.



Mashable



We're all familiar with the image of someone donning virtual reality goggles to enter a new environment while seated at their computer.

At UCLA, [Nanthia Suthana](#) is one of the first neuroscientists in the world to harness the power of VR to unravel how someone's brain encodes and retrieves memories while the person explores a new virtual setting on foot.

Her work recently captured the attention of the popular digital network, Mashable, which profiled her in its "How She Works" video series.

"Without our memories, each of us would be lost in time and cut off from other people," said Suthana, an assistant professor of neurosurgery and psychiatry at the David Geffen School of Medicine at UCLA. "At UCLA, we are the first to blend virtual reality with a surgically implanted prosthesis to reveal what happens inside the brain when we create memories."

The ultimate goal? To develop therapeutic tools that could restore lost memories to people suffering from Alzheimer's disease, traumatic brain injury and other disorders.

In 2015, Suthana recruited a crack team of experts in bioengineering, neuroscience, computer science and physics to help design a virtual-reality lab at UCLA. She crafted a study that correlates electrical activity from the neuro-prosthesis deep inside the brain with a patient's physical movement in the virtual environment. No one has achieved this before.



Mashable

In the Mashable video, Suthana preps research patient David Kidd, who suffers from profound memory loss. He wears a black motion-capture bodysuit and cap (think actor Andy Serkis as Caesar in "Planet of the Apes") studded with reflective markers to track his movement.

A set of goggles transports Kidd into a virtual environment where yellow lights signal locations for him to walk toward and remember. Then the research team tests his ability to remember the route without the lighting cues.

After the experiment, Suthana wirelessly downloads the recording of Kidd's electrical brain activity from the neuro-prosthetic device implanted in his head. Later, she'll analyze his deep brain waves to measure the strength of his learning and recall.

Virtual reality allows the UCLA team to observe how Kidd's memories are formed and recalled while navigating a new environment.

"All of our daily memories are visually linked to space — the setting in which they are created," said Suthana who is also the Ruth and Raymond H. Stotter Chair in Neurosurgery. "When you forget where you left your keys or parked your car, you automatically try to visualize where and when you last saw them. The same principle holds true for complex tasks, like navigating a grocery store or learning your way around a new city.

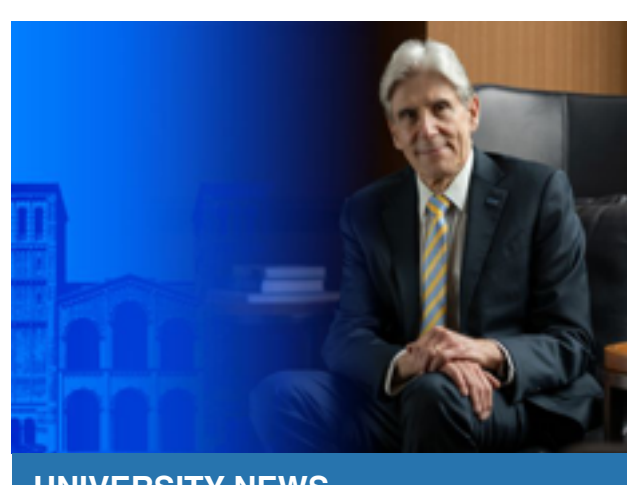
"We take these basic functions for granted — the ability to remember a friend's face, your wedding day or spouse's birthday," she added. "But when someone loses these memories, it devastates their quality of life."

Thanks to her curiosity about how memories define us, Suthana's advances in virtual reality have opened the door into an entirely new realm of brain research.

[Learn more about neuroscience research at UCLA](#)

Tags: [health](#) | [technology](#) | [research](#) | [neuroscience](#)

Top UCLA News



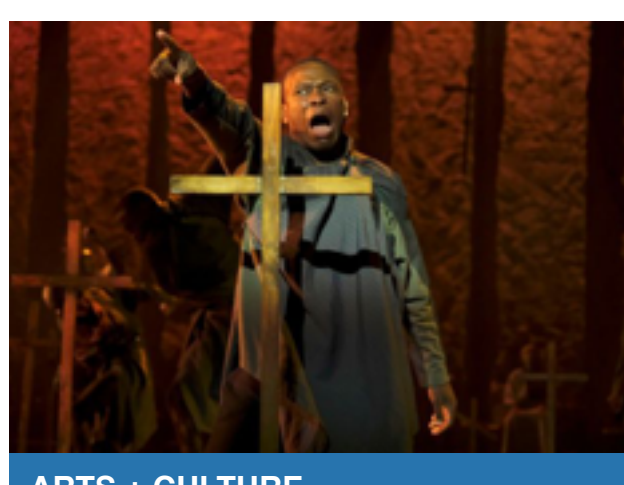
UNIVERSITY NEWS

Julio Frenk to take helm of UCLA, nation's No. 1-ranked public university, as its 7th chancellor



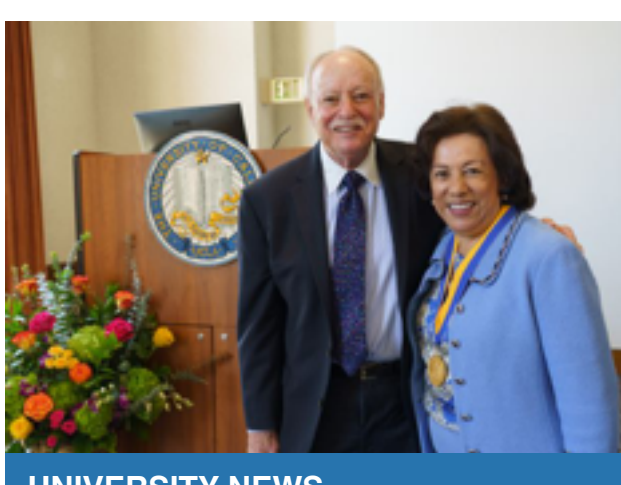
ARTS + CULTURE

UCLA-led national workshop series to bridge technological innovation, culture and creativity



ARTS + CULTURE

CAP UCLA's 2024-25 season brings global artistry to Los Angeles



UNIVERSITY NEWS

Trailblazer Antonia Hernández awarded UCLA Medal

Stay Connected

SIGN UP FOR A DAILY BRIEFING
Get top research & news headlines four days a week.
(Check your inbox or spam filter for confirmation.)

Email address

Subscribe to a UCLA Newsroom RSS feed and our story headlines will be automatically delivered to your news reader.

→

- [UCLA on Twitter](#)
 - [UCLA on Facebook](#)
 - [UCLA on LinkedIn](#)
 - [@UCLA on Instagram](#)
- [UCLA on YouTube](#)

UCLA Newsroom



CATEGORIES

- All content
- Arts + culture
- Environment + climate
- Faculty + staff
- Health + behavior
- Nation, world + society
- Science + technology
- Students + campus
- University news
- UCLA in the community
- UCLA Magazine
- Campus statements
- Election 2024

FOR NEWS MEDIA

- Media contacts at UCLA
- Media advisories
- News releases
- Images
- About UCLA: Fast facts
- Media guide to faculty experts
- Journalist guide to UCLA
- UCLA on X
- Media Relations staff
- UCLA Broadcast Studio
- Newsletter sign-up

UCLA SITES

- Happenings
- Athletics
- Extension
- Health
- Giving
- COVID-19 Resources