Indian researchers create eco-friendly surgical robot

This new system is designed to do very precise and delicate surgeries. The robot uses spider exoskeletons and silk fibres, which are biodegradable, meaning they don't harm the environment.

The robot is especially useful for surgeries on the brain, eyes, and heart, the researchers revealed.

Researchers from Woxsen University, Telangana, have built a new robot that can help doctors perform surgeries with more accuracy.

What's special about this robot is that it uses artificial intelligence (AI) and parts made from natural materials like spider legs and silk, instead of metal and plastic. This helps reduce waste and makes surgery more eco-friendly.

This new system, created by the university's AI Research Centre, is designed to do very precise and delicate surgeries. The robot uses spider exoskeletons and silk fibres, which are biodegradable, meaning they break down naturally and don't harm the environment. These materials replace the plastic and metal usually found in surgical tools.

The robot is especially useful for surgeries on the brain, eyes, and heart, the researchers revealed. Early tests show it may increase surgical accuracy by 70% and reduce damage to healthy tissue by 50%. This could help patients recover faster and have fewer complications.

With carbon-neutral components and AI-powered telesurgery, it enables remote high-precision surgeries and promotes sustainable healthcare.

In ophthalmology, the system can facilitate operations like cataract extraction and retinal repair, while in cardiovascular settings, it could support intricate procedures such as microvascular suturing and vessel repair.

"We are building the future of surgery—where sustainability, artificial intelligence, and human expertise converge to redefine patient care. This system is more than a technological milestone;

it’s a vision of how healthcare can evolve responsibly and equitably," said Dr. Hemachandran K, Director of the AI Research Centre.

Doctors can use this robot to remove brain tumors without harming nearby areas. In eye surgeries, it can help remove cataracts or fix problems in the retina. It can also assist in heart surgeries by helping repair tiny blood vessels.

Another feature is that doctors can use this robot to do surgeries from far away. This is useful in remote or rural areas where there may not be specialists available.

The robot sends real-time images and uses smart AI tools to correct any small mistakes, helping doctors work with more confidence even from a distance.

Even though the robot runs on AI, surgeons still have full control. They can take over manually, if needed. The robot also adjusts its movements based on what’s happening during surgery to avoid any errors.

Woxsen University is now working with hospitals to test the robot in real surgeries. They want to make sure it's safe and works well before it can be used widely.

The university is also starting a special training program for doctors to learn how to use this system. The course will include virtual practice, live training, and workshops with hospitals.

News Source:

https://www.indiatoday.in/health/story/eco-friendly-robotic-system-for-new-and-advanced-surgery-spider-legs-silk-fibres-2708942-2025-04-14