

Campus Beat Research Roundup: Researchers at IIT Indore develo ...

## Research Roundup: Researchers at IIT Indore develop jelly fish prototype for marine explorations

Posted on Monday, July 22, 2019

**Soft robotics is an emerging field and can be applied to mimic the gestures of living organisms, writes Sheetal Banchariya**

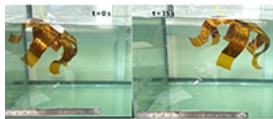
Share

Tweet

Share

Email

Print



Bio-inspired robots play a major role in the study and monitoring of marine life. Conventional bio-inspired robots are made of complicated rigid materials and mechanisms actuated by motors that limit their performance due to lack of flexibility. Conventional motor-based, bio-inspired robots are noisy and this limits its applicability for marine life monitoring as it may disturb the marine species.

The Mechatronics and Instrumentation Laboratory led by IA Palani, assistant professor of Mechanical Engineering at IIT Indore has developed a shape memory alloys (SMA) polymer-based soft robotic jellyfish for noiseless marine life monitoring using smart and soft

materials.

"Soft robotics is an emerging domain in the field of robotics, which challenges the traditional engineering thinking. SMA can be a suitable option for flexible actuators technology to mimic the gestures of living organisms. It is smart material that can recover from induced deformation and revert to its memorised shape on heating," says Palani.

The merits of the developed soft robot are noiseless actuation and simple flexible design that consumes less time for its fabrication. The continuous heating and cooling of the SMA wire-based polymer structure is responsible for expansion and contraction of its body with tentacles, which generate thrust to make the jellyfish robot to move in the water.

The developed robot has been tested in the laboratory environment and has achieved a motion of 1 cm/s. The device uses an SMA spring-based mechanism to mimic the flutter of the rear caudal fin of the fish, which creates the propulsive force to move the robotic fish.

"By utilising the combination of smart and soft materials, it is possible to mimic and create flexible structures and complex motions like real underwater living creatures," adds Palani.

The researchers are further working on the development of SMA actuated autonomous bio-inspired soft robotic fish and jellyfish, which can be extended for material transfer and rescue application in flooded zones and sea exploration. The institute will soon be collaborating with the National Institute of Oceanography to further refine the robot.

"The robot can be used for various applications such as studying the functioning of certain underwater species that are highly conscious of artificial cameras, understanding the behaviour of coral reefs and spying to avoid unwanted threats through water resources," adds Palani.

### ADVERTISEMENT

#### MOST READ ARTICLES

[UGC asks institutes to form a committee to oversee discrimination cases against SC, ST students](#)

Aimed at curbing caste-based discrimination, the University Grants Commission (UGC) has instructed i

[UGC to assess quality of PhDs awarded in the last decade](#)

In the last 10 years, the maximum number of PhDs has been awarded across the universities. In the se

[Role of foreign languages in a liberal education curriculum](#)

The primary goal of a liberal education university is to provide relevant skills to students that th

[Engineering was a backup plan for UPSC women topper](#)

Though Srushti Jayant Deshmukh was sure that she will be able to clear the much coveted civil serv

[Back](#) | [Next](#)

### GET UNTANGLED

Recently asked

[Sir My daughter is very bright chil](#)

[My son is 8 years old, very bright](#)

[I'm a bcom hons graduate from D](#)

[Post your Query](#)

MOST SEARCHED TAGS

[HealthCare](#)[Journalism](#)[Photography](#)[Engineering](#)[Civil services exams](#)[Mas](#)[Management](#)[SCM](#)[Acting as career](#)[Bschool ranking](#)[MBA ranking](#)[Online Distance MBA](#)[Fashion and Desig](#)

RELATED



[Q&A: Tech interventions needed to create project-based learning, says IIT Guwahati director](#)

...

The newly-launched IIT-Guwahati director talks about his plans to make the institute a global name. ...



[Q&A: Students get exposure through skill courses school-level](#)

...

By introducing skill subjects in the school curriculum, students are able to get better exposure at the various o ...



[Research Roundup: Researchers at IIT Indore develop jelly fish prototype for marine explorations](#)

...

The Mechatronics and Instrumentation Laboratory led by IA Palani, assistant professor of Mechanical Engineering at IIT I ...



[Portal Exclusive: How inculcating innovation in te make the education system better](#)

...

With modern technology, the role of a teacher has enh as a facilitator. There has been innovation in various as

[Back](#) | [Next](#)

COURSES

- Undergraduate Degree
- Postgraduate Diploma
- Distance Learning
- Exec Education
- Short Term

STUDY ABROAD

- UK
- US
- Canada
- AU/NZ
- Singapore
- Europe
- Middle East

CAREERS

- Arts
- Science
- Commerce
- Offbeat
- Media
- IT and Engineering
- Management
- Medicine
- Change Makers
- Fashion and Design

TESTS

- Test Drive
- Exam Planner

OTHER SECTIONS

- Counsellor Forum
- Job Trends
- Chat Session
- Special Education
- School-Guide
- Alerts
- Editor's-Pick
- Poll
- Videos

SCHOLARSHIPS

- Indian
- International

OTHER SITES

- ePaper
- Mumbai Mirror
- Pune Mirror
- Bangalore Mirror
- TimesWellness
- Indiatimes
- Times Of India
- Economic Times
- Itsmyascent

CAMPUS BEAT

- College Life
- Student Speak
- Events