Sea stars inspire new generations of robots that can adapt to physical injuries

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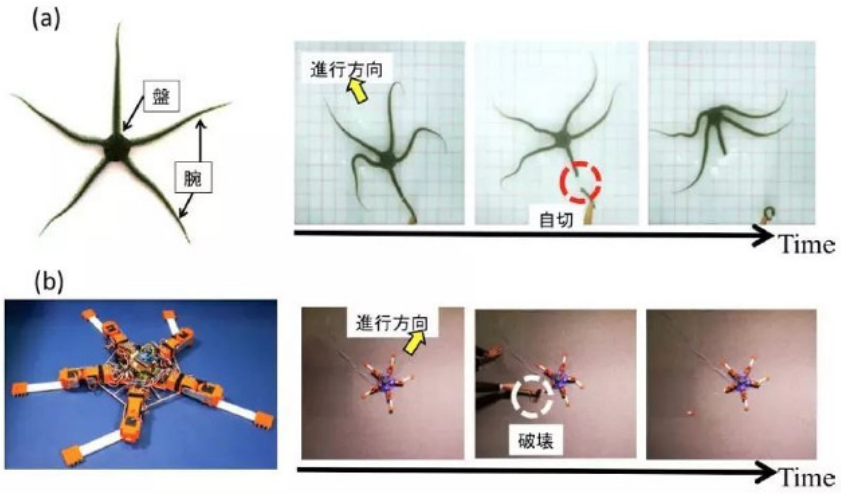
This is an important breakthrough because robots will become more and more quality and sustainable to operate in harsh environments with many dangerous conditions.



Conventional robots tend to require a considerable amount of time (several tens of seconds) to adapt when they are physically damaged unexpectedly. To address this problem, researchers led by Professor Akio Ishiguro of Tohoku University's Institute of Electronic Communication focused on studying a starfish with five flexible tentacles. This starfish lacks a sophisticated central nervous system, but it can immediately adapt to the loss of tentacles and still move by coordinating the remaining tentacles.

Based on behavioral experiments involving starfish, tentacles were cut in many ways, the researchers introduced a simple decentralized control mechanism, in which each arm only operated on the ground when it has the support reaction force. This mechanism can be applied in a robot that can adapt to unexpected physical damage within a few seconds, just like the biological model of this starfish.

The researchers hope that the finding will help them develop complete robots that can operate in harsh environments like disaster areas. It also provides insights into the essential mechanisms of corrosion engines during movement.