

# Frontiers of Mechanical Engineering

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## Cover Story:

Legged robot with manipulation function is a hot research topic in recent years. Adding an extra arm is a useful but general method for robots to obtain manipulation ability. Consequently, this article explores a hexapod robot named ALLOMAN which uses integrated leg–arm limb to realize manipulation without adding extra arm. The integrated leg–arm limbs combine the functions of leg and arm and possess a high switch flexibility between these two modes. Benefiting from the different end-effectors equipped on the leg–arm limbs, the robot can realize various manipulation functions such as gripping, shearing, coordinated clamping and coordinated shearing. Furthermore, because manipulating while moving is an effective way for robot to increase efficiency and gain time, we present a mobile manipulation method for our robot based on the characteristics of leg–arm integration. This robot can be fit for various tasks which need both locomotion and manipulation functions, such as city security and planet exploration.

Yi Zheng, Kun Xu, Yaobin Tian, Xilun Ding. *Front. Mech. Eng.*, 2022, 17(1): 8

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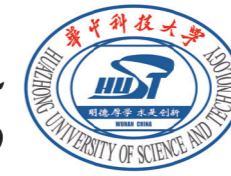
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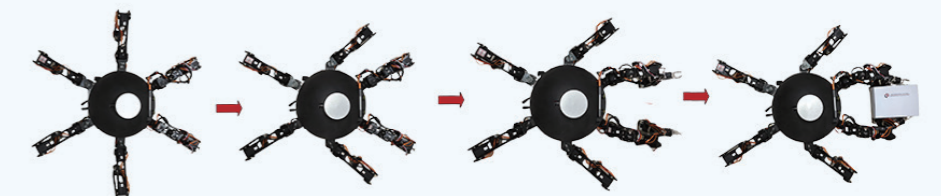
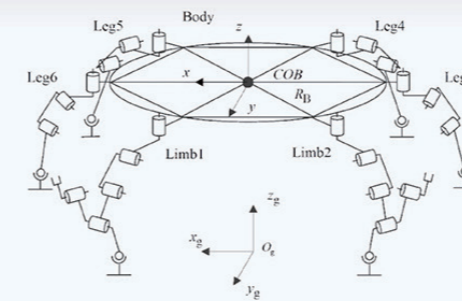
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## Radial Symmetrical Hexapod Robot with Leg–arm Integration



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