

# Advanced Robotic Technology Research Center(ARTRC)

Working towards the realization of advanced robot technology to establish a secure, safe, and comfortable society.

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Along with the rapid globalization of the economy, industrial robots and automated machines are being utilized from mass production into the fields of medical welfare and life support. ARTRC is pursuing basic study on mechanism, sensors, actuators, control and interface of robots, artificial intelligence, and so on. Development of advanced robot technology applying to a variety of fields including manufacturing, medical welfare, life support, agriculture, life-saving, and survey of space and ocean resources are greatly promoted.

## Field robotics

◆ **4 Wheeled & 4 Legged Personal robot**  
(to follow and service the elderly)

◆ **Underwater robot**  
(vacuum packaged by soft plastic film)



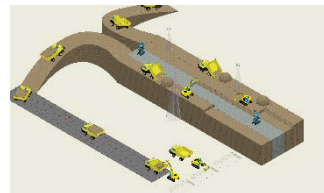
◆ **Deformable tensegrity structure underwater robot**  
(propelling by transformation)



◆ **Practice of environmentally friendly agriculture with robots**  
(locomotion on rough terrain, navigation, and assistance of workers)



◆ **Autonomous construction robot**  
(automatic construction using the multiple autonomous robots)



◆ **Stair-climbable wheel chair for the disabled**

◆ **Self balanced motor bike robot with the inertia rotor**  
(miniature scale sized model)



## Dynamics controlled robot



# Medical and welfare robot

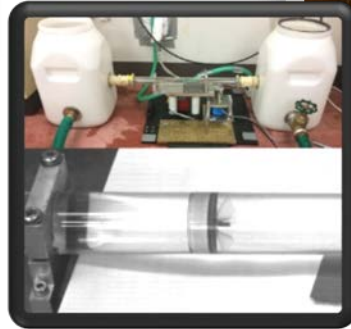
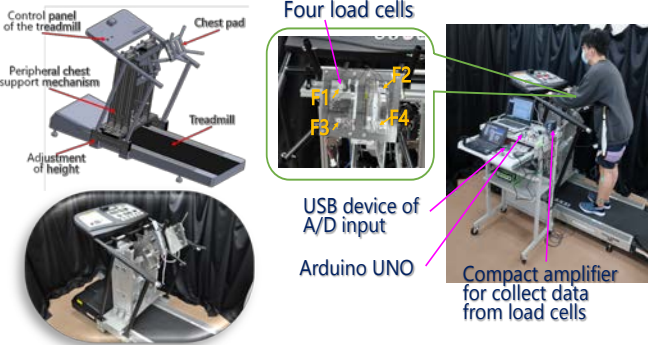
◆ Novel rollator using a rotatable chest pad



◆ Digital mirror therapy system



◆ Gait training machine using a rotatable chest pad

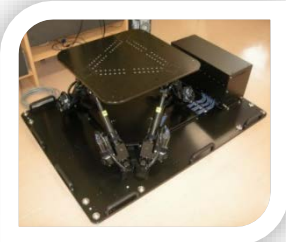


◆ Vibration flow pump for artificial heart

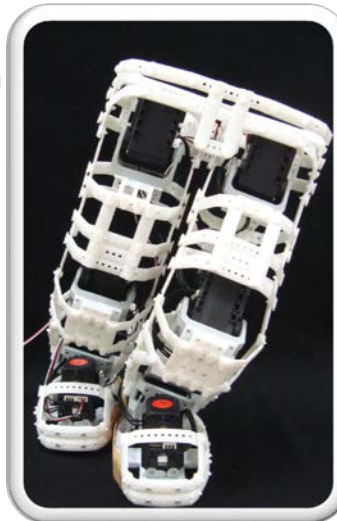
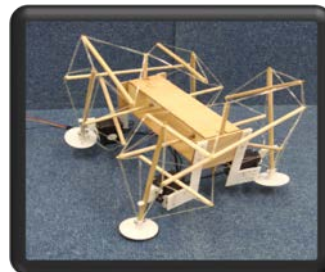
## Soft-robotics

### Parallel link robot

Stewart platform with 6 D.O.F.s (high speed and high accuracy)

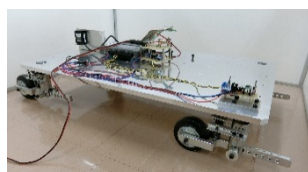


Biped robot with flexible exoskeleton structure



Tensegrity walking robot

Rehabilitation and training device for knee joint (parallel link mechanism with force control)



Human-like musculoskeletal robot arm with a two-joint muscle



Shock absorbed cart on bumping