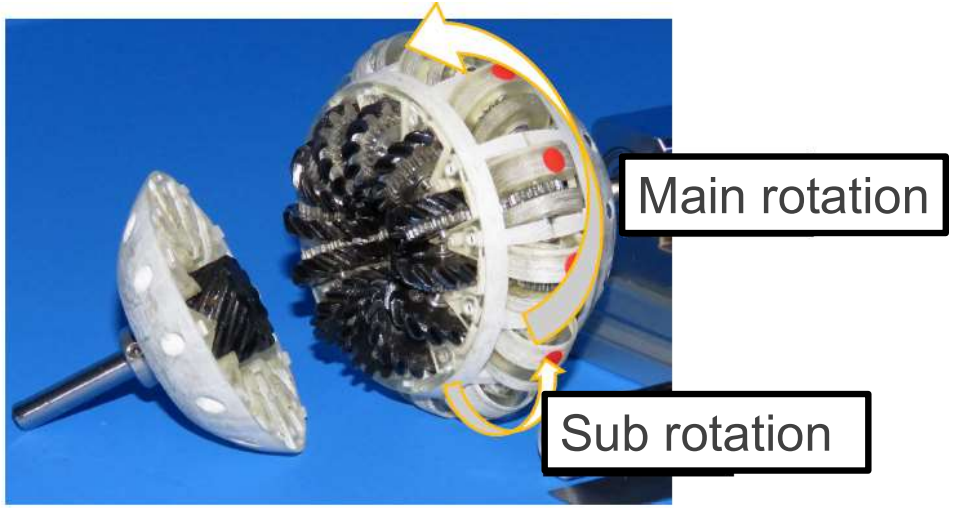
Tohoku Univ. Technology

Drive mechanism with high runnability for all-directional movement

All-directional movement with a simple mechanism!

Run in any direction on uneven ground!



Overview

Invention of drive mechanism for all-directional movement suitable in a small area

All-directional movement with simple mechanism

Conventional : Complex & large drive mechanism
Need to control many inputs by synchronization

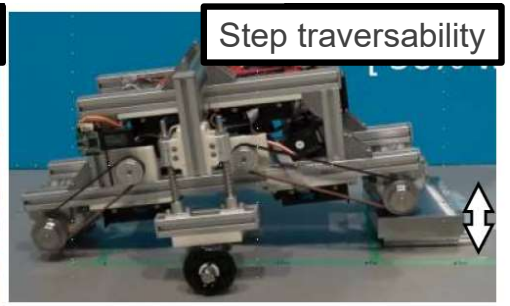
Invention : Simple & small with only 5 components
All-directional movement by simply changing the rotation speed ratio of 2 inputs

Excellent step traversability & runnability

Traversability: Experimental confirmation of traversing a step having the same height as the wheel radius
⇒ **Able to climb over indoor thresholds and carpets**

Runnability: ① Even 1 wheel spins out, the other wheels will move
⇒ **Runs even on uneven flooring and outdoor surfaces**
② Magnetic cog-wheel with non-contact gear is used for power transmission
⇒ **Runs in dusty and large temperature gap environments**
⇒ **Able to operate in sanitary environment where machine oil is not appropriated**

Features・Outstandings



Product Application

・Care and welfare industry: all-directional wheelchair and mobility scooter
- Elevator in apartment complex → Narrow hallway → All-directional mobility scooter to reach the entrance
- Indoor mobility to be used in Japanese houses with threshold and many steps
- All-directional wheelchair that helps caregiver by moving easily side to bed/bath

・ Factory automation industry: product transportation in factories
- For access to narrow areas when transporting products between machine tools where re-layout is difficult
- Transportation in environment where oil-less is required due to hygiene requirements, such as food, semiconductor, and pharmaceutical plants

・ Domestic robot, smart mobility, etc.

IP Data

IP No.	:	JP2018-522345 & several international applications
Inventor	:	Kenjiro TADAKUMA et al.
Admin No.	:	T16-008

Contact

Tohoku Techno Arch Co., Ltd.
TEL +81 22−222−3049 Please visit CONTACT here