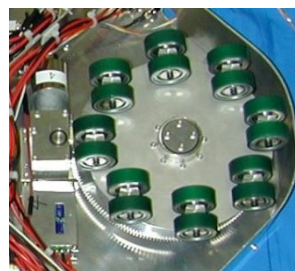
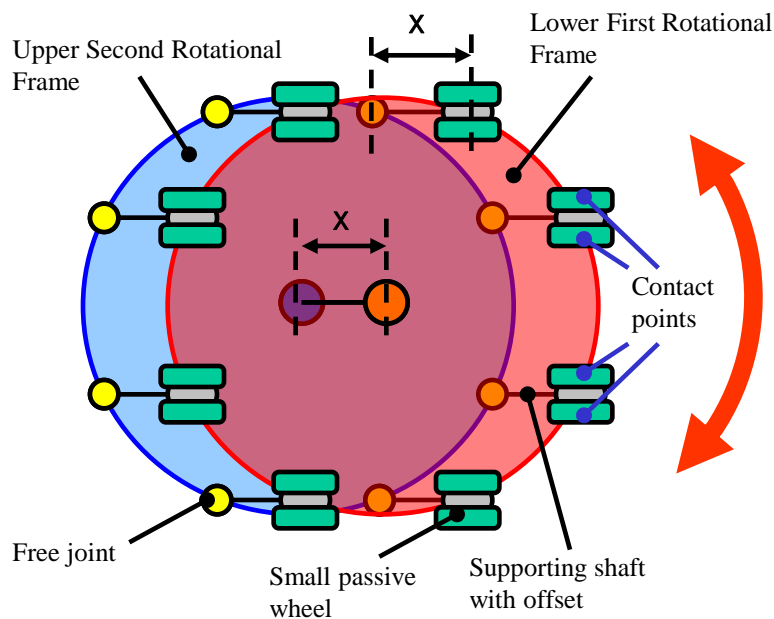


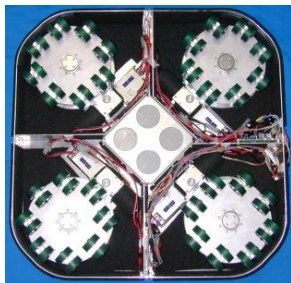
Holonomic Omni-directional Vehicle with Omni-directional Wheel

Associate Professor Riichiro Tadakuma

Mechanism of omni-directional wheel



Active Omni-directional wheel



Bottom view of omni-directional vehicle



Demonstration of the vehicles

Content :

Transport vehicles for factories, hospitals, and warehouses must have high operational performance, being able to move freely in narrow spaces and to reach desired points precisely without complicated switchover.

We developed a light omni-directional vehicle with new omni-directional wheel mechanism. In this wheel mechanism, we employed first large rotational frame with free rollers inclining on the flat surface.

In the figure shown left, the first shaft supporting a small passive wheel that rotates freely is bound to the lower first rotational frame. The first shaft is connected to the second eccentric shaft. The second shaft is put into the hole in the upper second rotational frame so the small passive wheel is kept in a certain direction. The first and second rotational frames are fixed after being shifted vertically. The eccentricity “ x ” between the first and second supporting shafts of small passive wheels is quantitatively equivalent to the eccentricity “ x ” of the central axes of these rotational frames. This three dimensional parallel link mechanism realizes smooth rotation of the whole omni-directional wheel mechanism.

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