Advanced Mechatronics

(Magnetic Suspension System, Mechanical Control System, Robotics)

Project Leader

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Objective

In this project, novel mechatronics systems are developed. We have already developed a mechanical noncontact suspension and manipulation system and automatic harvesting system. These systems have many advantages, such as zero mechanical friction and manpower saving. We will investigate these mechanical control system and enhance their functions. We also aim to develop a new mechatronics systems. The mechanical systems using control technology have a lot of possibilities. It may solve problems of energy consamption and carbon offset.

Project Outline

(1) Magnetic Suspension System

Magnetic suspension systems have many advantages. They do not need lubrication and have no mechanical friction, because of their noncontact mechanisms. In this research, a noncontact manipulation system using motion control of permanent magnets will be developed. This type of suspension system has features including zero heat generation, no need of coil windings and suitability for teleoperation.

(2) Robotics in Agriculture

It is very difficult to apply automatic control to agricultural systems because of non-uniformity. We will develop a automatic harvesting system using various sensing systems and dexterous manipulation design.

(3) Novel Mechanical Control System

The problems of energy and carbon offset are very serious. Intelligent mechanical control systems may solve or suppress these problems. We will work to develop such systems.

References

http://www.lab.kochi-tech.ac.jp/oka-lab/society/review.html

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