Exercises in Robotics1

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1. Course Description
Each student will build an autonomous mobile robot and tackle the following tasks.
(1) Fundamental task
(2) Automated traveling task
(3) Maze task
(4) Line trace task

2. Course Objectives
The aim of this class is to understand intelligent automated machines. Through exercises students will build autonomous mobile robots and obtain fundamental skills and the knowledge of mechanics, electronics , and computer science.

3. Grading Policy
Students are evaluated based on the achievement of objectives and tasks.

4. Textbook and Reference
Textbook
Textbooks, robot kits, tools and computers are prepared.

5. Requirements(Assignments)
Students are required to pay 3,000 JPY for this lecture.

6. Note

7. Schedule
Introduction: history of robots, etc.
Fundamentals of robot making: checking your robot kit and setting up your software development environment
Fundamentals of robot making: assembling a basic robot
Fundamentals of robot making: programming and testing
Fundamentals of robot making: running forward and turning (fundamental task)
Basic task: programming using conditional statements (If-then-else construct)
Basic task: utilizing an ultra-sonic sensor
Basic task: programming for obstacle-avoided problem
Basic task: obstacle avoidance task
Basic task: maze task
Advanced task: utilizing infrared sensors
Advanced task: tuning each sensor's position and sensitivity
Advanced task: line trace task (course I, II)
Advanced task: line trace task (course III, IV)
Summary