

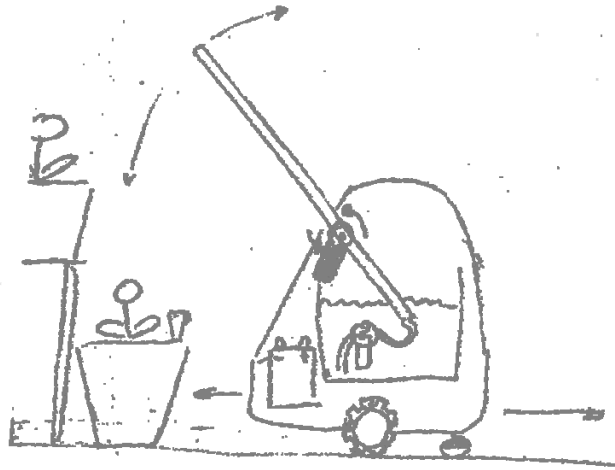
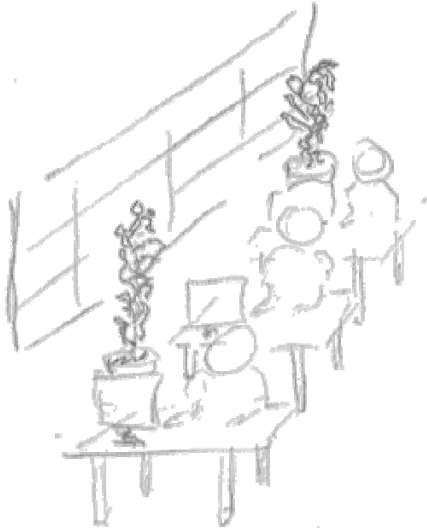
# An Affordable Robotic Plant Butler

Nikolaus Correll

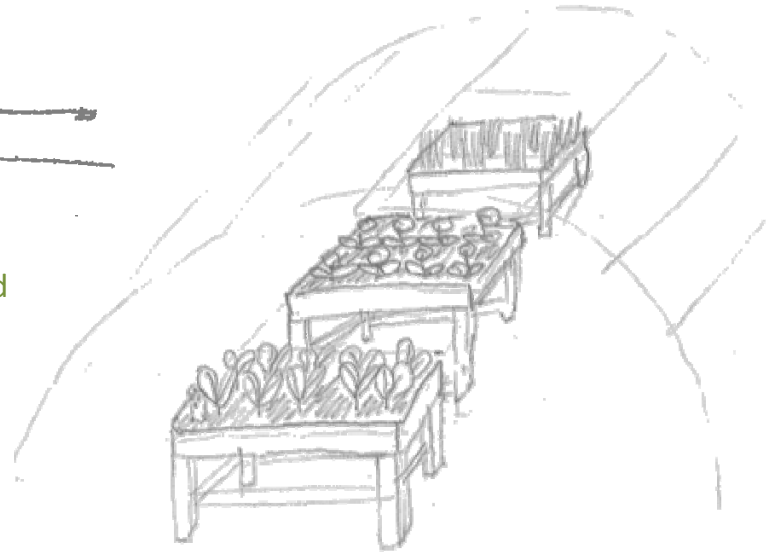
Massachusetts Institute of Technology



# Application



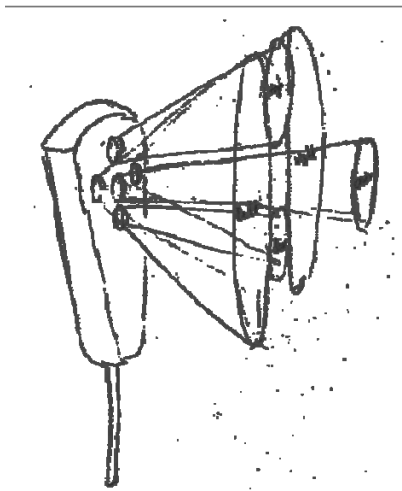
- Automatic watering of plants in offices, homes, greenhouses and nurseries
- Plant sensors monitor plant status and attract robot using infrared emissions (one per pot)
- Robot explores environment reactively and servoes its 1-DOF actuator to alarming plants



# Implementation

- Sensor

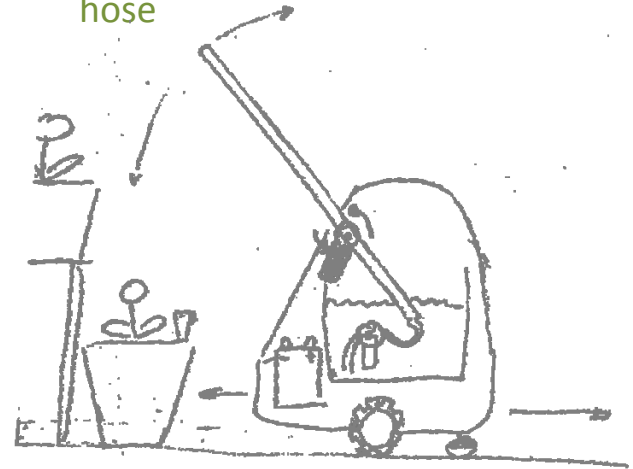
- Operation principle of Roomba home-base in 3D
- Infrared cones encode “left”, “right”, “top”, and “down”



- Capacitive humidity sensor
- Battery operated
- Manually placed facing robot workspace
- ERP: **\$14.99/piece**

- Robot

- Differential wheels drive
- Bumper/US sensor for collision avoidance
- 1-DOF actuator for guiding watering hose



- Photo-sensor tracks plant sensor
- Directional information obtained by information encoded on infrared rays
- Depth information obtained by signal-strength
- ERP: **\$299**