

Development of robot system for assisting production of dried persimmon

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Background

- ▶ Ichida gaki 市田柿 Dried perssimon
- ▶ Specialty of Nagano prefecture



Background



出典:<https://www.jamis.iiijan.or.jp/product/ichidagaki.php>

- Ichida gaki: Ichida persimmon
 - ▶ Dried persimmon produced in Shimoina, Nagano prefecture
 - Production of dried persimmon
 - ▶ It is becoming difficult to secure workers
 - ▶ Work concentrates only on harvesting season
 - ▶ Work of setting fruit on a peeling machine is tiresome
- ➔ Automating a process using a robot, costs and labor will be reduced

Production process



Harvesting



Peeling



Hanging



Drying



Massaging



Final product

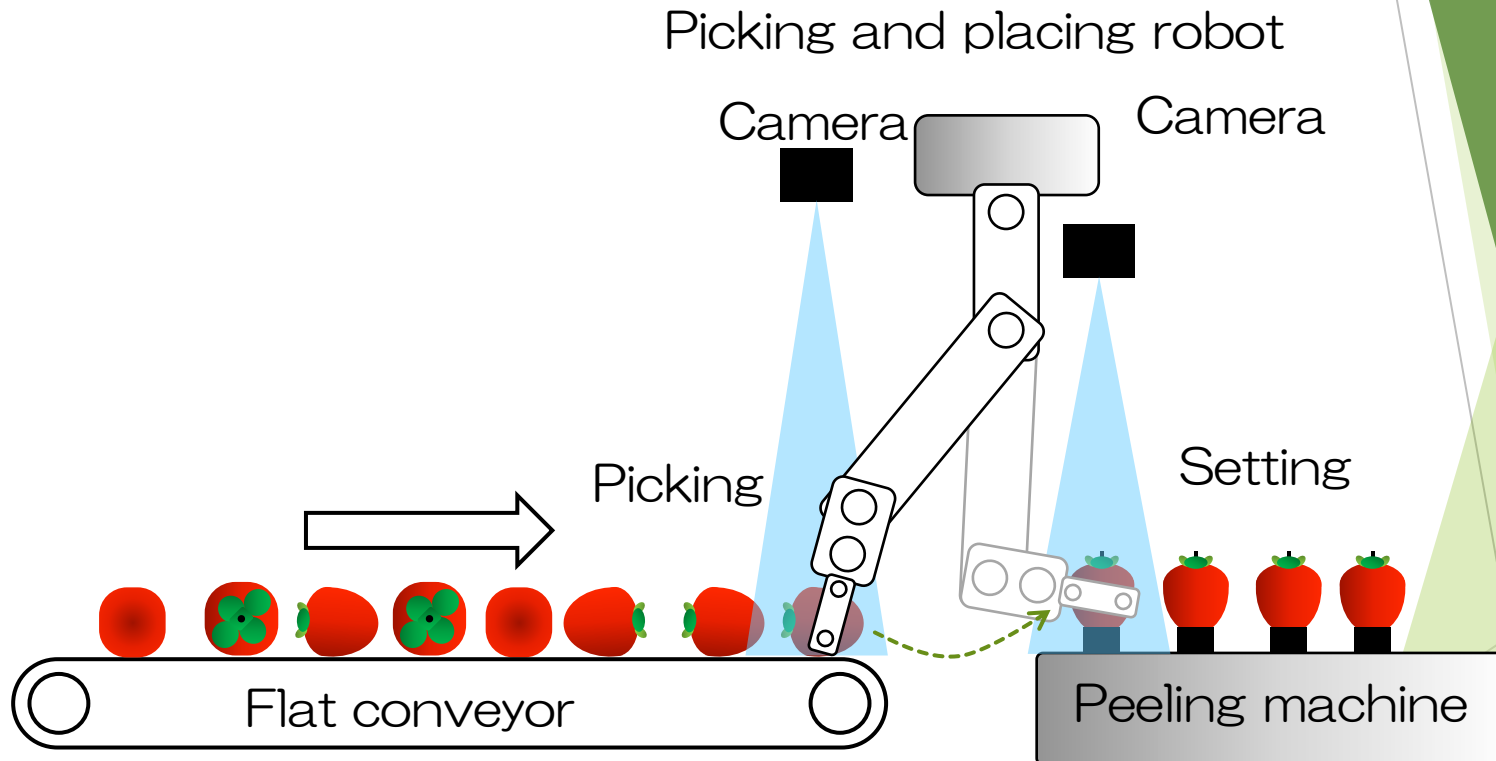
Actual working scene

4 sec/fruit

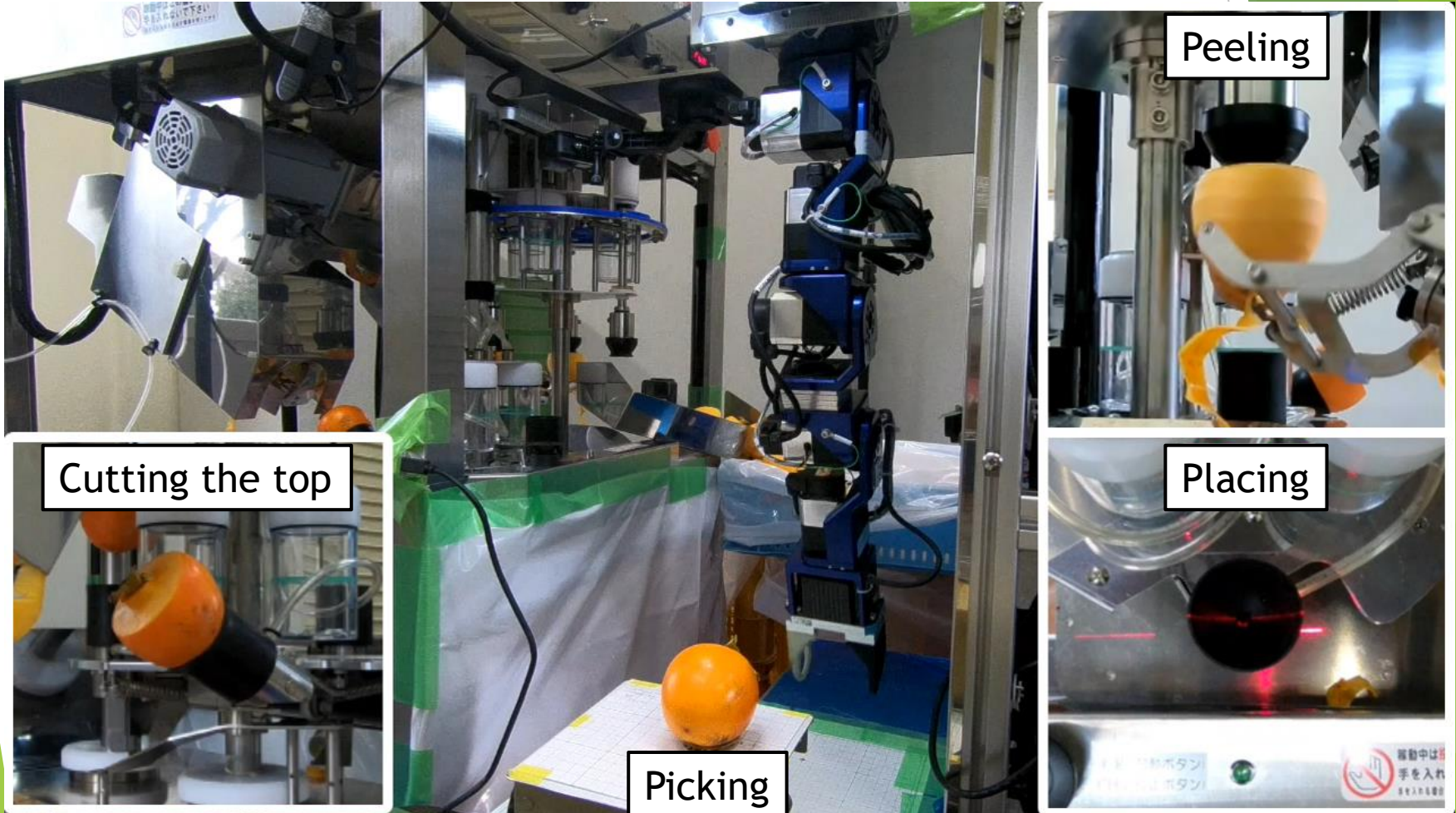


Robot system concept

Replacing human operators with robots on peeling process



Pick and place robot



Cutting the top

Picking

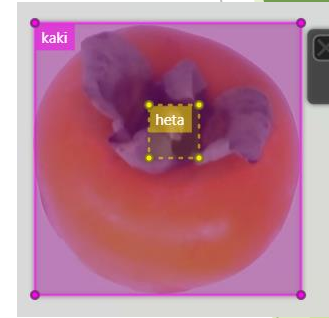
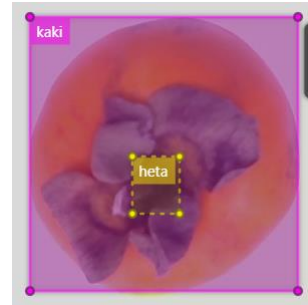
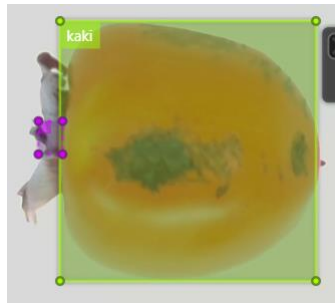
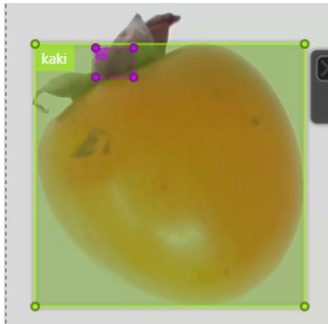
Peeling

Placing

Machin vision system

- ▶ Yolo V3 was used for detecting the position of a fruit and a stem-end

Test data



Estimation



Picking: Seen from the side

Placing: Seen from the top

Pick and place robot



Picking



Placing

Picking and placing

