AUTOMATED PICKING AND PACKING

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HORIZON 2020 ROADMAP (**KEY DRIVERS** FOR ROBOTICS IN AGRICULTURE)
EUROPEAN COMMISSION

WHY

AUTOMATED PICKING AND PACKING

- **ECONOMICS**- 1/3RD OF THE TOTAL PRODUCTION COSTS
- **DEMOGRAPHICS** (LABOR AVAILABILITY, POPULATION GROWTH, URBANIZATION, AVAILABILITY OF LAND, WATER, CLIMATE CHANGE)
- **DEMAND** (EATING HABITS, INCOME)
- HEALTH AND **HYGIENE**
- FROM BATCH ORIENTED TO **CONTINUOUS OPERATION**
- **OTHER...**

PICK AND PLACE SEEMS EFFORTLESS

(IS ALSO THE MOST COMMON MANIPULATION ACTION)

HOWEVER- MAKING ROBOTS DO THE SAME IS INTERESTING AND CHALLENGING

DARPA Manipulation challenge

HUMAN LIKE DEXTERITY WHILE MANIPULATING IN UNSTRUCTURED ENVIRONMENTS

AMAZON ROBOTICS CHALLENGE 2017
https://www.amazonrobotics.com/#/roboticschallenge

ROBOCUP AT WORK (EU)
http://rockinrobotchallenge.eu/work.php

DARPA Robotics challenge

KUKA Innovation challenge

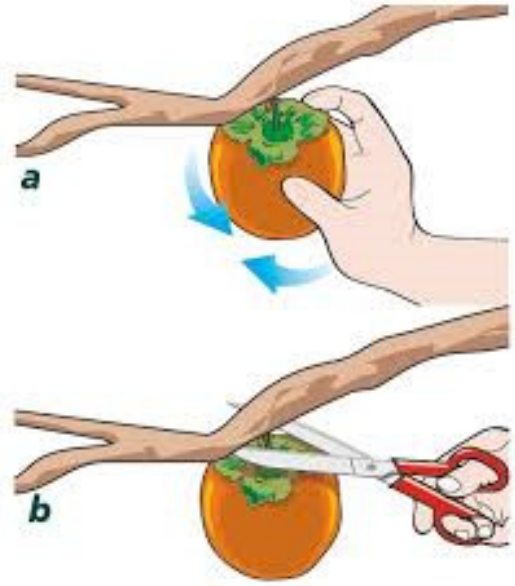
Many others……

H2020 Roadmap, EPSRC white paper …

LETS REVERSE ENGINEER "WHAT YOUR BRAIN WOULD DO"

REAL TIME INTEGRATION OF VISION, TOUCH, FORCE, MOVEMENT, PLANNING, PREDICTING

PICKING AND PACKING - (AUTOMATO)

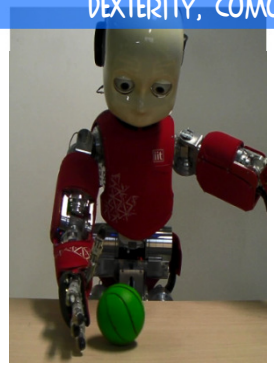


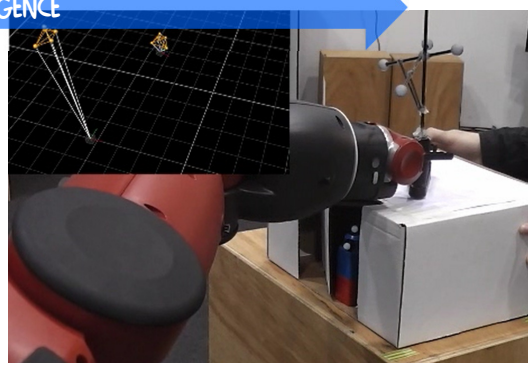
EU FP7 PROJECT DARWIN

Dextrous
Assembler
Robot
Working with embodied
INtelligence

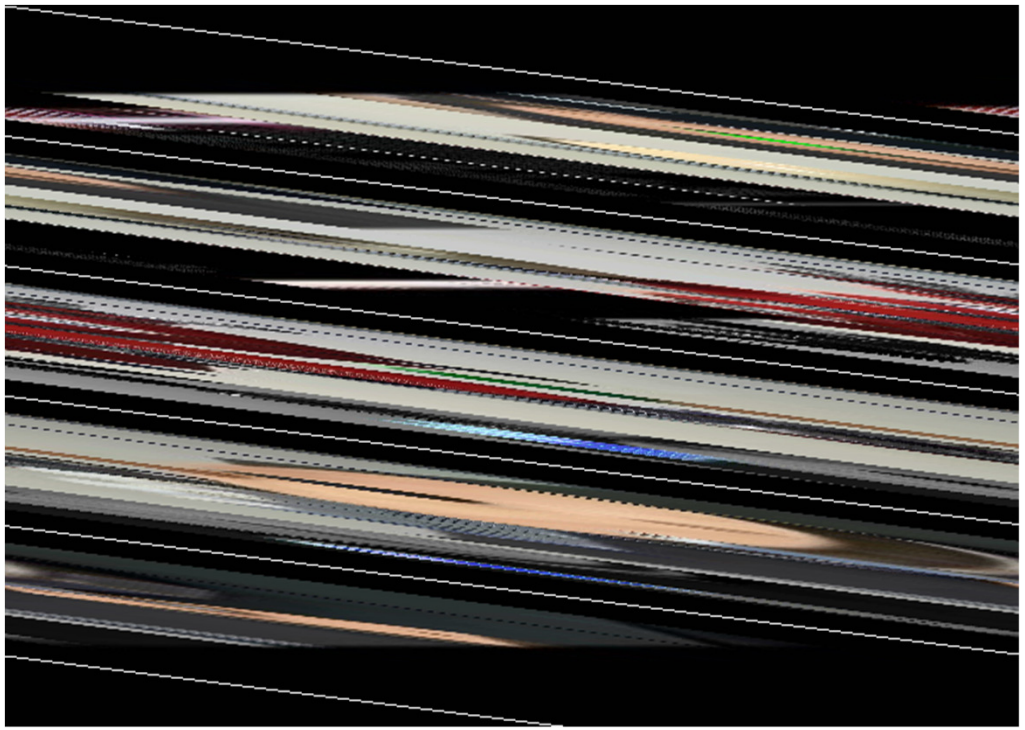
DARWIN

DEXTERITY, CUMULATIVE LEARNING AND INTELLIGENCE





WHILE DARWIN FOCUSED ON MANUFAC**TURING,** THE ARCHITECTURE CAN BE APPLIED TO **AGROTECH**



Active Vision

Dextrous Manipulation (Humanoids, Industrial, Mobile robots)

Tool Use (Learning and Coordination)

Cause-Effect Learning/Reasoning

User Friendly Plug and Play Cognitive architectures

The university has recently purchased a state of the art Industrial robot from Universal Robotics

Herding, Monitoring and Surveillance