Report for experiment GAROTICS

D RIF: Report on RIF visit outcome

Green asparagus harvesting robotic system

STRAUSS
UNIHB
CWS

Version 1
Submission date: **04.11.2015**

General remarks

Please write the texts in the sections and keep everything short and concise. In case of charts, tables, pictures or other graphical material with higher resolution, please provide the original files as email-attachments or download links

1 Location / Date

Service Robotics and Ambient Assisted Living Lab
Via Boccioni, 1 - 56037 Peccioli, Pisa - ITALY
By the ECHORD E++ project team GARotics
From 15th to 16th October 2015

2 Atendees

Annagiulia Morachioli	RIF
Adrian Leu	UNIHB
Lasse Langstädtler	UNIHB
Adam Cunnington	CWS

3 Agenda

Thursday, 15th of October 2015

Item	Responsible	Time
Visit to RIF laboratories	The Peccioli RIF, GARotics	10:00 – 10:30
Opening	The Peccioli RIF	10:30 – 10:45
GARotics presentation		
GARotics vision-based asparagus detection presentation/demo (1)	Uni Bremen	10:45 – 11:30
GARotics gripping system presentation (2)	Uni Bremen	11:30 – 12:15
GARotics field experiments presentation (3)	C.Write & Son Ltd	12:15 – 13:30
Lunch break		13:30 – 14:30
RIF experts feedback	The Peccioli RIF	14:30 – 15:00
Discussion and Brainstorming	All	15:00 – 15:30

Friday, 16th of October 2015

Item	Responsible	Time
Visit to Biofarm (4)	The Peccioli RIF, GARotics	10:00 – 14:30
Lunch break		14:30 – 15:30

4 Discussions and results

Prior to the meeting STRAUSS had sent the AmLight prototype to Pisa for demonstrating und studying issues; it arrived one day before the meeting.

The agenda as shown above was approved by the participants in the two days of the meeting the following has been discussed and agreed on:

(1) GARotics vision-based asparagus detection presentation/demo
the RIF experts confirmed that the development of the vision-based algorithm looks promising and is heading in the right direction

(2) GARotics gripping system presentation

After a demonstration of the existing gripping and lifting tool Lasse from UNIHB explain the ideas and first investigations done for iimproving the the harvesting tool. Already at this point Annagiulia from RIF gave her feedback and additional suggestions, which resulted in ideas for further tests and developments as follows:

- active gripping for increase of reliability
- use of container (to reduce time for depositioning)
- second knife for cutting of third-class asparagus without gripping
- harvesting of a group of asparagus by adaption of the opening angle of gripper (-> active gripping)

(3) GARotics field experiments presentation

Adam from CWS presented the results and conclusions of field tests performed during the AmLight project. He furthermore explained in what way he started preparing an asparagus dam for next season trial and finally pointed out again his vision for automated green asparagus from and end-user point of view.

(4) Visit to Biofarm

The aim of visiting a green asparagus farm was to get an extra opinion of an end-user and to identify difference in green asparagus farming between Italy and UK. Differences identified were:

- less space between lines of asparagus
- flat bed cultivation, next to no dam
- asparagus planted closer to each other