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AI4Agri

Developing green and digital skills towards AI use in agriculture

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KA220-VET - Cooperation partnerships in vocational education and training

WP2: Connecting AI with Agricultural sector: current status and needs assessment

A.2.3.: Reflection Roundtable Report

Developed by

IRIS Sustainable Development

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1. Introduction/ Roundtable details

Partner organisation: IRIS Sustainable Development

Date:

1. 20/06/2024
2. 26/06/2024

Location: Online

Number of participants: 10

Profile of the participants: AI experts, engineering educators, agriculture experts, potential entrepreneurs.

Additional data selection: The Roundtable was held during the Midsummer holidays in Sweden, which led to the unforeseen last-minute cancellation of three participants. To ensure a smooth data collection process, we proceeded with the Roundtable to gather an initial set of data. Subsequently, on 26/06/24, we conducted one-on-one interviews presenting to the participants not only the needs assessment survey results but also the conclusions of the Roundtable to continue the conversation from this point and achieve the objective of the Roundtable to exchange views and opinions in order to address and finalize the training needs assessment on the AI applications in agriculture (WPO3).

2. Conclusion on the main aspects of the Roundtable

AI use in agriculture, opportunities and risks

Participants reported different levels of engagement with AI applications depending on their field of expertise, i.e. AI experts and educators contributed to the discussion with more detailed information about AI use and practicalities as well as agricultural experts and (existing/potential) entrepreneurs provided a more general perspective about their experiences. Many participants expressed their surprise with the high rates of awareness reported by the survey participants and discussed that this should be associated with the background and the age of the needs assessment survey respondents. Additionally, they reported as reasonable the gap between AI awareness and practical use due to the fact that AI is a relatively new concept and has not been adopted by the general public and agricultural workers/entrepreneurs yet due to the high initial costs and the lack of training.

Participants referred and analysed the advantages of AI use in agriculture such as benefits in the following aspects:

1. development of strategies for crop production (all phases);
2. prediction of plant health issues and diseases;

3. provision of farm-specific weather risk assessments mitigating weather related risks;

4. provision of sensors for soil moisture and temperature detection;

5. provision of drones together with automation technology to enable efficient and sustainable material handling in forestry and agriculture as well as drone-based crop management.

6. provision of scalability that is making the final output cheaper per farmer than before when supercomputing was utilised

7. contribution on food security and advance of developing markets

8. the final output that is used by the farmers can be quite simple to be easily used

9. the content creation is easier and more inclusive, since it can be translated in any language

10. accuracy improvements

11. decision making improvements

12. advance productivity and profitability

However, participants also reported concerns about AI use in terms of the following aspects:

1. initial costs as well as costs of maintenance and implementation

2. integration with existing systems

3. lack of awareness and expertise of the current workforce as well as

4. data privacy

5. development of "elites" of AI adoption that are integrating AI tools easily being able to afford the initial costs

6. possible bias of the algorithm that could provide false predictions and information

7. farmers can over-rely on AI for decision making instead of using it as a support tool

In terms of AI applications in both small- and large-scale business as well as income, participants agreed that the cost of acquiring, establishing and maintaining AI systems is possible to create and increase existing inequalities, since these systems are available only for large-scale farmers and entrepreneurs due to their high initial costs that prevent SMEs and small-sized farms to acquire and integrate them. However, a participant explained that developing an AI model takes an initial investment, but once it's built, it can be used to analyze data from many different farms, reducing the cost per farmer. For instance, when it comes to decision making AI applications, an AI model can be trained on large datasets and farmers can upload their data to the service receiving customized recommendations for their specific fields spreading the development cost of the AI model across many users.

In terms of age and educational level, participants reported that there is a need for raising awareness about technological improvements and integration on day-to-day operations in order to proceed on a national inclusive adoption of AI in agriculture industry. Many participants agreed on the fact that the AI applications that are finally used by the farmers are usually quite simplified to be deployed without any kind of advanced technical education. AI solution companies are usually providing a quick training to the users of applications explaining the application practicalities and its advisory content. Therefore, AI applications can be easily utilised by any farmer and the advanced AI expertise is

required only by the Machine learning developers. The real current need is the development of a common understanding about AI advancements and use in agriculture.

Current training and policy needs

In terms of training needs, the majority of the participants agreed that it is not mandatory for farmers and entrepreneurs to have advanced AI education, since this is the work of Machine learning developers. Farmers and entrepreneurs are the end-users of AI tools that are simplified and easy to use. However, there is a need for raising awareness on the digitalisation of Agriculture, the contribution of AI in sustainable development and green decision making focusing on elder workforce.

Participants referred the agricultural workers should be trained on (1) basic IT skills such as how to use the AI tools considering the differentiation between the applications; (2) soft skills such as communication and problem solving; as well as (3) green skills and terminology to develop a common understanding.

Participants referred that entrepreneurs should be trained on (1) basic IT skills in order to have a general overview; (2) soft skills such as communication and problem solving in order to collaborate with farmers and other stakeholders/occupational profiles as well as (3) green skills and terminology to develop a common understanding -as the agricultural workers.

A participant referred there would be a need for basic entrepreneurial skills for potential entrepreneurs.

In terms of policy needs, participants reported that there is much work to be done on regulations about data protection, privacy, and IP regulations. Simultaneously, there should be a national educational approach that will tackle geographical, generational and gender barriers to promote ethical AI use in agriculture protecting those with less opportunities. Finally, the need for financial assistance and a common financial approach for small-size enterprises and farms towards the minimization of potential inequalities due to the high initial costs was also reported.

Comments on the Survey analysis results

During the Roundtable, many participants expressed that they didn't expected such significant results on AI awareness and described as reasonable the gap between awareness and AI practical use. They also commented that sample characteristics may shape this result that could be changed with a bigger sample size. Finally, they reported that more work should be done on awareness raising regarding the environmental benefits of AI use in agriculture.

Further demands expressed

There were no further demands expressed.

3. Summary

There is a significant gap between the AI awareness and practical AI use that it is reasonable due to the fact that AI use in agriculture is an emerging concept. However, considering the correlation between AI awareness and age, there is a possibility of different results, if there were more participants above the age of 50.

Participants indicated both benefits and risks as well as focused on the governmental initiatives that will enhance the beneficial aspects of AI use and prevent farmers from risks, such as financial regulations for initial costs, and ethical frameworks.

In terms of training needs, farmers and entrepreneurs is not needed to have advanced AI education, but they should both have basic IT skills, soft skills such as communication and problem solving as well as green skills.

AI4Agri Project website: https://www.ai-4-agri.eu/

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