Program Outline for Training Course

on

Sustainable and Smart Farming using Cutting Edge Technologies and IoT

07-18 December 2020

Organized by:

AIT Extension
Executive & Professional Education

Registration and Further Details:

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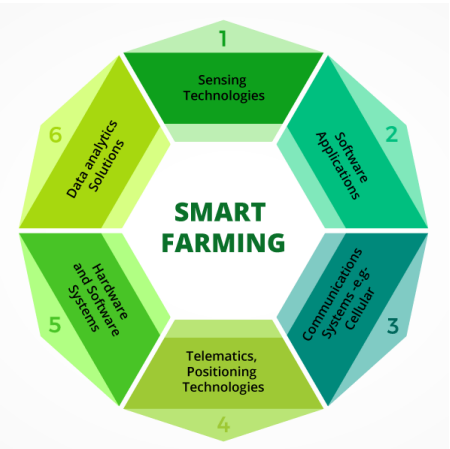
Background

Demand for agricultural products will increase greatly in the future due to an increasing world population and higher meat or fish/seafood consumption per capita. The Food and Agriculture Organization (FAO) of the United Nations estimates that the world population will reach to 10 billion in 2050. Higher income per capita has brought about the expansion of the middle class, especially in populous developing countries and helped change consumer behavior towards a preference for better and protein-based food. Globally, meat consumption per capita is estimated to be increasing by 1.2% annually. This development will hike demand for agricultural products, considering that one kilogram of meat requires about 2-7 kilograms of agricultural products as feed.

The usual agricultural practices will not be able to feed the World, as demand for agricultural products increases while agricultural land remains limited. In many ways today's agricultural practices are inefficient, with irrigation wasting an estimated 80-90% of the water used and about 40% of farms globally overuse fertilizers and chemicals, leading to harmful effects on soil and water quality, and consequently yield per unit area. At the same time some farms underuse fertilizers, leading to less-than-optimal yields. The agricultural sector has been developing genetic modification and cross species breeding techniques to obtain seeds that can endure harsher environments and provide higher yields, but these technologies might not be up to the challenge of raising agricultural products by 70% over the next 30 years. Farmers should therefore seek new ways to increase production per unit area.

More innovative agricultural technologies should be adopted in order to enable the agricultural sector to feed an increasing world population. Digital Technologies (DTs) can tackle many food production and distribution challenges such as low productivity and inefficiency, high transaction costs, limited use of inputs and minimal commercialization. Keeping in mind that the 4th Industrial Revolution (i.e., emergence of ICT or DTs) is behind the disruption in all sectors and industries, agriculture, one of the oldest industries in human history, is also evolving more rapidly than ever. Smart farming technology is a technological solution that aims to create highly added value by integrating existing agricultural technologies with cutting-edge ICT solutions including Sensors, Drone Technology, GIS and RS, Artificial Intelligence (AI), AI Bots or Autonomous Robots, Internet of Things (IoT), Big Data and Data Analytics.



Source: Beecham Research, 2014

AIT Extension Program on Digital Disruption in Agriculture and Food Industry will be a set of independent as well as interconnected training courses (online, face2face, blended), which have been designed to equip you with better understanding, required knowledge and skills on Digital Transformation in Agriculture & Food Industry. One of the interconnected training courses is "Sustainable and Smart Farming using Cutting Edge Technologies and IoT".

With the application of Fourth Industrial Revolution technologies, agriculture, one of the oldest industries in human history, is now evolving more rapidly than ever. We believe this could potentially help us feed the future population, eradicate hunger and nutrition issue, manage the agricultural waste properly and the sector becomes more resource efficient. Precision farming and smart agriculture using IoT, AI and Blockchain Technology could simply address many of the present day challenges including cutting cost for inputs, reducing water use, addressing diseases and pest infestation, food safety and well distribution of agricultural produces. Application of GIS&RS and Data Analytics could assist us to predict the potential impacts of climate change induced disasters and get prepared on addressing those.

Smart Farming is an emerging farming practice that refers to managing farms using innovative and modern Information and Communication Technologies (ICT) to increase the quantity and quality of products while optimizing the inputs and human labor required, reduce waste or recycle, and address climate change impact and other challenges.

The main objective of this online training course will be to learn about viable and efficient strategies for sustainable and profitable agriculture through smart farming, application of cutting edge technologies and IoT in the field of agriculture and food industry. The participants will have ample opportunities to listen and interact with experts from the technology field as well as experts who are applying those technologies in the field.

Learning Outcomes

At the end of this training course participants will have better understanding on:

- Required knowledge and skills in the field of frontier technologies in the field of agriculture.
- Opportunity to exchange ideas with experts/resource persons who are involved in advanced sustainable technological research for agriculture in future.
- Learn about precision farming tools and IoT in enhancing on-farm productivity.
- Understand how to empower smallholder farmers through DT/ICT Tools in achieving efficiency, market access and financial services.
- Strengthened knowledge on efficient and sustainable agro-based businesses using innovative cutting edge technologies and other ICT tools.

Target Audience

- Agriculturists, Practitioners, Decisionmakers/Policymakers and Development Partners.
- Young and Experienced Farmers and Entrepreneurs interested on digital transformation of agriculture and food industry.
- Those with a responsibility or interest in the intersection of ICT, digital tools and agriculture across the world.
- No prior background on ICT and DAT is required.

Course Modules

1) **Sustainable and Smart Farming for the Future**
   - Recent advances in Farm Automation and Crop Production
   - Precision Farming for High Value Crops
   - Crop Management using Smart Phones and Internet
   - An introduction to Digital Agricultural Technologies (DAT)
   - DAT - its readiness and enabling environment

2) **IoT (Internet of things) and Cutting Edge Technologies in Agriculture and Food Industry**
   - Sensors, Actuators, Cameras and other connected devices
   - Robots and Drones/UAVs
   - Monitoring systems and equipment controllers to maintain the field and monitor the crops conditions remotely
   - Monitoring of Climate Conditions
   - Greenhouse Automation
   - Process Automation for increased business efficiency

3) **IoT for shaping Sustainable and Smart Farming**

   - Managing Production Risks, Enhancing Product Quality and Volumes
   - Efficient Water and Inputs Management
   - Eco-friendly Weed Control and Management
   - Integrated Nutrient and Soil Health Management
   - Better Traceability of Food and increased Food Safety
   - Cost Management and Waste Reduction

4) **Geoinformatics based Decision Support System (DSS)**
   - Drone Imaging and Monitoring using UAVs
   - Satellite Remote Sensing (RS) Application
   - GIS based Multi-criteria Analysis and Planning
   - RS and GIS based Decision Support System (DSS)

Mode of Delivery

- Each of the Courses will be delivered via ONLINE within a duration of 2 weeks period, where the actual contact hours will be 18 hours.
- Participants will have opportunity to interact with trainers for 9 hours and the remaining 9 hours will be assisted learning, virtual tour and demonstration.
- An exam or assessment will be held at the end of each Course, and participants will have to pass it and be present in all sessions to be qualified for the Certificate/Transcript.

Training Platform

- AIT Moodle
- ZOOM
- Online Collaboration Software (for brainstorm, groupwork)
- Virtual Field/Laboratory Visits and Demonstrations.

Trainers/Facilitators

Professors and Researchers from AIT, Professionals and Practitioners from International Organizations and Relevant Companies/Industries.

Course Schedule

Start On: 07-18 December 2020
Duration: 02 Weeks, Online (09 hours per Week)

Fee and Registration

300 USD per person per course.

Interested participants are requested to communicate or send queries for the Deadline for Registration, Group Registration Fee with/without Credit Card Payment followed by Normal Registration Fee with bank transfer options.

For Payment:
Payment by Credit card: please download the credit card payment form and kindly fill up the information that requires then send it back to Mr. Md. Anishur Rahman, Program Coordinator at anish@ait.ac.th

Payment by bank transfer:
Pls. transfer your registration fee in full to:

Account Name: Asian Institute of Technology
Account Number: Current A/C no. 468-046301-2
Bank Name: Siam Commercial Bank Co., LTD
Thammasat Hospital Sub-branch
Pathum Thani 12120, THAILAND
SWIFT CODE: SICOTHBK

or
Account Name: Asian Institute of Technology
Account Number: 381-100099-9
Bank Name: Kasikorn Bank Public Company Limited
KlongLuang Branch
Pathumthani 12120, Thailand
SWIFT CODE: KASITHBK

** Pls. provide a copy of the pay-in-slip or transfer statement to Mr. Md. Anishur Rahman at anish@ait.ac.th or Ms. Marilyn Alcantra at malcantara@ait.ac.th for reference and registration confirmation.

Term & Conditions: The Organizer reserves the right to change and/or cancel the training program due to unforeseen circumstances or low enrollment.

Certificate

Successful Candidate will be awarded with Certificate (attendance & completion) and Transcript.

Enquiry and Further Details

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