CENTRE FOR AGRICULTURAL INFORMATICS & E-GOVERNANCE RESEARCH STUDIES

(CAIRS)

(A Centre of Excellence in Agriculture and Rural Transformation Initiatives)
Department of Computer Science and Engineering
CAPE Institute of Technology
Levengipuram – 627 114, Tirunelveli District, Tamil Nadu

PURPOSE & BACKGROUND

Rural India is a powerhouse. Rural Transformation for sustainable growth requires adoption or promotion of best practices in areas viz.,Agriculture and Farming,Water and Sanitation, Healthcare and Nutrition, Education and Skilling, Energy and Environment, Livelihoods and Sustainability. The Government's Vaazhndhu Kaattuvom Project aims at rural transformation in the State of Tamil Nadu, through "Rural Enterprise Ecosystem Development" (www.tnrtp.org).

Agriculture is an "engine of sustainable and inclusive economic growth, inflation management and rural development". While production-oriented "Green" and "White" revolutions have run their course, the need of the hour, now, is a "Knowledge" revolution in rural areas to promote "Natural Farming", "Organic Farming","Ecological Farming","Permaculture – Permanent Agriculture" and "Regenerative Farming". Indian farming community require "scientific agricultural knowledge and innovation", over and above their traditional knowledge, so as to increase their agricultural productivity and strengthen supply chain and value chain of agricultural and food production systems.

A Sustainable Agriculture and Food Farming Systems for self-reliant and climate resilient agriculture requires intensive application of science and technology within a well-defined framework to adopt "strategic use" of Digital Technology in Farming System Life Cycle.

Agricultural Technology (AgriTech) is a form of technological innovation, encompassing data connected devices using information and communications technology, internet and artificial intelligence, agricultural biochemistry and biotechnology, innovative food and farming, farm robotics and automation, and smart warehousing and logistics. Technologies from Artificial Intelligence & Machine Learning, Blockchain, Drones, Satellite and IoT are redefining the agriculture across the globe.

The emerging AgriTech StartUps may consider providing digitalised services (providing information and support services) to farmers or through Farmer Producer Organisations (FPOs) / Self-Help Groups (SHGs), for impacting farming community (Crops, livestock, fisheries (inland and marine), agro-forestry and forestry) - very positively – at grampanchayat level.

India is home to 2.50 Lakh Grampanchayats empowered with 29 functional items (11th Schedule of the Indian Constitution), which include, among the others, (a) Agriculture, including agricultural extension, (b) Land improvement, implementation of land reforms, land consolidation, and soil conservation, (c) Minor irrigation, water management, and watershed development, (d) Animal husbandry, dairying, and poultry, (e) Fisheries, (f) Social forestry and farm forestry, (g) Minor forest produces, (h) Small-scale industries, including food processing industries, (i) Khadi, village, and cottage industries, (j) Rural Housing, (k) Drinking water, (l) Fuel and fodder and (m) Non-conventional energy sources.

Agricultural information forms a diversified group with Scientists at the top, Extension Professionals, Administrators and Traders at the middle core, and the Farmers at the bottom.

FUTURE OF FARMING – RELEVANCE OF AGRICULTURAL INFORMATICS RESEARCH AND DEVELOPMENT ECOSYSTEM

Agricultural Informatics is the science of agricultural information, agricultural information processing and information systems. Agricultural Informatics emerges as a discipline out of synergisation of both Computer Science & Technology and Agricultural Science & Technology. The Indian Agricultural Education System produces about 25000 agricultural graduates from about 400 Agricultural Colleges, and 1.5 Million engineering graduates are also passing out, every year. They have the bigger role to play in realizing "Agricultural Informatics" to the Farming community in the languages known to them.

The "**future of farming**" will be mostly based on extensive research and development in the areas of Genomics, Robotics, Informatics and Nanotechnology (GRIN), and such intensification is being witnessed now in the Agricultural system. The Agricultural System (Research System, Input System, Production System, and Output System) built-in with effective ICT enabled "Information Systems", is capable of delivering services in Indian local languages, for enhancing agricultural production, productivity and income rise. **It requires about one Lakh of "Graduates-Ready through Agricultural Informatics" by 2025, for digital transformation of Agricultural System through Innovation (Agriculture 4.0).**

Dr. Ashok Dalwai Committee on Doubling Farmers Income by 2022 Report 2018, recommends adoption of Digital Technology in Agriculture, in a time bound manner, for the benefit of more than 14.5 Crore operational farm holders of India, as follows: -

- Digitalised Agriculture: Digital Technology and Innovation in Agriculture: Digital India, Make in India, Skill India and StartUps India Programmes for Transformational Reforms in Agricultural Sector (SMART Irrigated Farming, SMART Rainfed Farming and SMART Tribal Farming);
- Digitalised Agro-Met Advisories & Agricultural Risk Management Solution;
- Digitalized Agricultural Resources Information System and Micro-Level Planning for achieving SMART VILLAGE & SMART FARMING;
- Digitalized Value Chain for about 400 agricultural Commodities;
- Digitalised Access to Inputs, Technology, Knowledge, Skill, Agricultural Finance, Credit, Marketing and Agribusiness Management, to Farmers;
- Digitalized Integrated Land and Water Management System – Per Drop More Crop;
- Digitalized Farm Health Management for reduction of Farmers' Losses.

Emerging technologies, such as AI, IoT, Blockchain and Drones-further enabled by unlocking key datasets, **offer an unprecedented and unparalleled opportunity** to boost the efficiency and effectiveness of agriculture production systems viz., (a) to enhance digital and financial inclusivity among smallholder farmers (b) to build trust and transparency through quality and traceability, (c) to protect the environment from unsustainable practices, and (d) to establish sustainable farm incomes.

Developing future research strategies and recommendations based on available knowledge, to address the emerging matrix of the agricultural problems in a holistic manner, **the CIT desires to establish a Centre for Agricultural Informatics and e-Governance Research Studies (CAIRS)**, in its Campus at Levengipuram (Tirunelveli District), and also launch an M.Tech/ PG Diploma / Diploma Course on Agricultural Informatics in due course, in association with the Shobhit Institute of Engineering and Technology (Deemed to be University) Meerut – A NAAC Accredited "A" Deemed to-be University and a pioneer in visualizing "Agricultural Informatics" Program in India - to motivate rural youths to undertake digitalisation of our Agricultural System for gainful employment opportunities.

MISSION

AGRICULTURAL INFORMATICS RESEARCH AND DEVELOPMENT ECOSYSTEM FOR INNOVATION AND JOB CREATION

DIGITAL TRANSFORMATION OF AGRICULTURE & E-COMMERCE PLATFORM FOR FARMERS AND WOMEN ENTREPRENEURS

Objectives

- To offer agricultural Informatics programme at M.Tech (2 Year), Post Graduate Diploma (1 Year) and Diploma (6 Month) levels;
- To offer Post Graduate Diploma and Diploma Programme in Agribusiness Management;
- To offer Diploma programme in Digital Marketing and Management;
- To undertake Research Projects and Development Projects for innovation in Agricultural Value Systems;
- To undertake e-Governance in Farming through capacity and Competency Development Programme for Rural Youths, Farm Women, FPOs, SHGs, Agricultural Cooperative Societies etc.;
- To build AgriTech StartUp Ecosystem (Incubator and Accelerator) facilitating Farming-as-a-Service
- To promote Research in adopting Digital Technologies to ensure optimum nutrients in soil and harvested food to minimise human diseases

- To undertake Research and Development projects on Innovation in "Agricultural Waste to Wealth".
- To network with National and International Institutions/Universities etc., for collaborative academic, research and entrepreneurship development programs.
- To undertake development projects in collaboration with NGOs and StartUps for digital transformation in agricultural system.
- To explore institutional collaboration (ISRO, DRDO, NI-MSME, NRAA, INS Kattabomman, Manonmaniam Sundaranar University, Tamilnadu Fisheries University, Tamilnadu Agricultural University and Tamilnadu Veterinary and Animal Sciences University etc.) to undertake research projects in Coastal Agro-Climatic Zone (Thoothukudi, Tirunelveli, Kanyakumari and Thiruvananthapuram Districts)
- To work with District level Departments for synergising government schemes at grassroots level for sustainable development and sustainable livelihood opportunities.

There is huge opportunity, as described below, to serve our farming community: -

- The farmer, as a consumer and a producer, needs to be empowered by access to information, inputs, farm-to-fork linkages and financing support etc.
- Agri entrepreneurship has emerged as a sunrise sector in the post-Covid phase, offering opportunities in agriculture and allied sectors.
- AgriTech in India has become a booming field and a "ray of hope" with numerous StartUps working with technologies enabling farmers to maximise their output, and solving some of the most critical and challenging problems of the sector including supply chain inefficiencies, weak market linkages, information and data gaps, dependable access to inputs and financing.
- Emerging Business Opportunities in AgriTech are (a) Market Linkages, (b) Digital Agriculture, (c) Better Access to Inputs, (d) Farming as a Solution, and (e) Financing.
- AgriTech is driving India's next green transformation – GRIN (Genomics, Robotics, Informatics and Nano technology).
- Artificial Intelligence (AI) technology, combined with Big Data, hold the potential to solve many key challenges. Big Data and AI technologies are complimentary, as AI can help to synthesize and analyse ever-expanding Data.
- AgriTech is a value innovation in Agriculture.

Core Team

Mr. I. Krishna Pillai

Chairman, CAPE Institute of Technology (CIT)

Dr. Jebamalai Vinanchiarachi

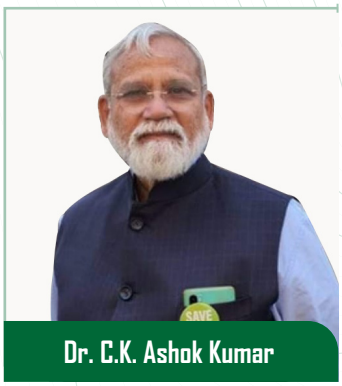
Chief Advisor, CIT - COE, Agriinformatics Former Principal Adviser to the Director General of United Nations Industrial Development Organization (UNIDO)

Dr. Jebamalai Vinanchiarachi

Chief Mentor, CIT-COE AgriInformatics; Professor Emeritus and Chairman (CAIRS)

Dr. K. Iyappa Karthick

Pro Chairman
CAPE Institute of Technology



Dr. C.K. Ashok Kumar

Founder Chairman, First World Community Subject Matter Expect

Mrs. Krishnaveni Kannan

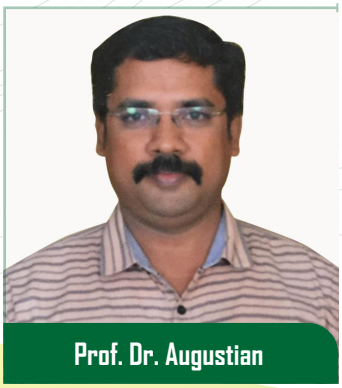
Director - CIT-COE Agriinformatics, Head, CAIRS - CIT, Managing Director, Mahalearning Education Pvt Ltd

Mr. J.B. Renin Jeya Gem

CEO - CAPE Institute of Technology

Dr. Mrs. Thanukumari

Principal - CAPE Institute of Technology



Prof. Dr. Augustian

AI Expert

Mr Sahaya Arokia Raj

Secretary General - Cape Green Mission

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Our Journey Since 2008

1st National Level Technical Symposium CEGMA'12

1st National Level Technical Symposium CEGMA'12

13th Annual day celebrations.

Pre-Stressed Concrete Workshop

MEGALITH'15

National Level Workshop

4th National Level Technical Symposium CENO 2K15

National level technical symposium FARAZ '16

This workshop was conducted by NASSCOM

Our department has visited software company called Wipro and we met with the software professionals.

Our students in the year of passing 2010 has celebrated fare-well day on their last day in our college, And enjoyed that day by lightning candle

Our department offers the students for the first fly in flight to the trip for Chennai and Mumbai on 6th to 12th July 2010

SPARK 2011 is a famous event conducted by MAM Engineering College, Trichy in which 45 students from our department had participated and won the Overall Champion. 20 Students got into first three positions.

Our department HOD Dr.A.S.RAJA won the prestigious National Level YITP award consecutively for the second time at an event conducted between various colleges across all over India in Trichy.

This event is for inaugurating CETA Activities for the academic year 2012-2013

This is the Industrial Visit for the final year students.
54 students have participated in this industrial visit. They have visited Techno park at Mumbai.

This is the Industrial Visit for the final year students and they visited in and around Mumbai. 54 students have participated in this industrial visit.

This is the first Industrial Visit which happened outside the India for the final year students

Industrial Visit: Solar power plant visit at aruppukottai (12.02.2016)

Two day workshop on PHP was conducted by our IT Department Association "ZINTA

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