JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Integrated Innovative Ecosystem for Stable and Sustainable development

Prof. Challa Narasimham
IOCL Chair Professor of CSSE
Andhra University
Visakhapatnam, India

Keywords:

Innovation, IoT, Simulation, Control strategies, Cloud computing, Nanomaterial, Emerging Technologies

Abstract:

An integrated system approach is the studies of complex phenomenon in a broad range of Multidisciplinary. An Innovative eco system refers to loosely interconnected network of different technologies. The systems' could provide access to a new capability that creates a vibrant ecosystem around the capability. In order to build an innovation ecosystem, the significant parameter is to undertake different technologies and often that lead to build relationships. This article focuses on the requirements of establishing the IIES by using IoT, Simulation of control access, cloud storage, nano technology, emerging areas like Artificial Intelligence, Machine Learning and Data engineering to build effective ecosystem for stable and sustainable development in all fields of the society and industry.

Background:

The diversity of innovation ideas improves the relevance of innovative individuals, increases the integration and density of the innovation ecosystem, and supports more stable and sustainable development of the innovation ecosystem. Technological innovation is the driving force behind the sustainable development of the innovation ecosystem, and data sharing is the foundation for the development of the innovation ecosystem's technological innovation system. These two criteria necessitate the efficient exchange of technological information, data resources, and other elements among different areas of innovation. The advancement of technical innovation requires the preservation of intellectual property rights, and each innovation subject engages in collaborative innovation with varying benefits. The Technological areas under IIES are:

1.IoT

2.Real Time Systems

3.AI Technologies

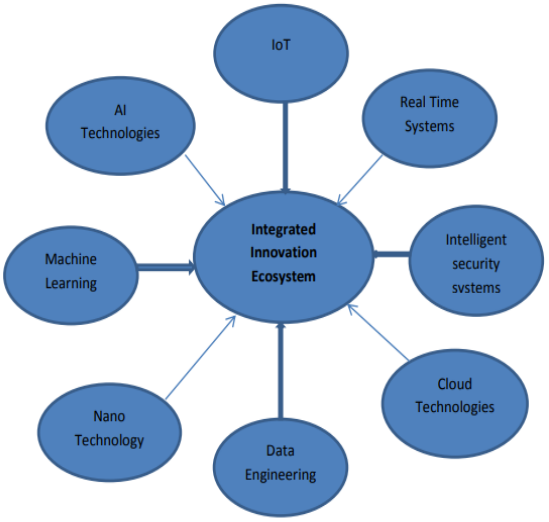
4.Machine Learning

5.Cloud Technologies

6.Intelligent Security Systems

7.Nano Technology

Design Architecture:



IoT

Recent advancements in wireless communication and the rapid proliferation of IoT devices are driving the adoption of smart antenna technologies and revolutionizing the deployment of intelligent systems across connected ecosystems. Innovative beam forming techniques, frequency band selection for antenna operations, and underlying design requirements formthe foundation for selecting appropriate antennas for various IoT use cases. Each of these applications operates on a different frequency band; each of these circuits requires different configurations.

Real Time Digital Simulation of Control Strategies

Aims to study real time data of power grid, and to understand the level of outages and transients occurring during abnormal conditions. Further, the controlling techniques in sustainable environment requires the smart control in resilient environment and its protection, in addition to the predictive analysis of motor drives and individual hybrid systems.

Maple soft HEV/ EV simulator: The Simulator used to expose the real time study of machine design aspects and Battery Management Services to explore the creativity of the students to build new things in HEV area.

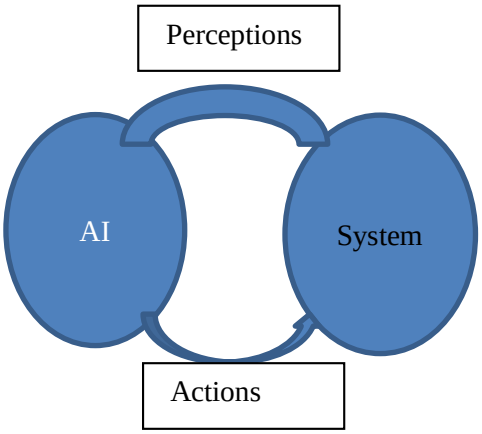
Emerging Technologies:

1.Data Engineering :

Data engineering aims to make the data generated every day and how it will be accessible effectively to improve the performance. Sustainability is the process of design, develop and process the systems to meet the individual or organizational requirements. According to the information from the literature about 329 Million Terrabytes of data are generated bon each day, that is 120 zettabytes of data per year. Hence, the generated data have to be processed and accessible effectively and efficiently.

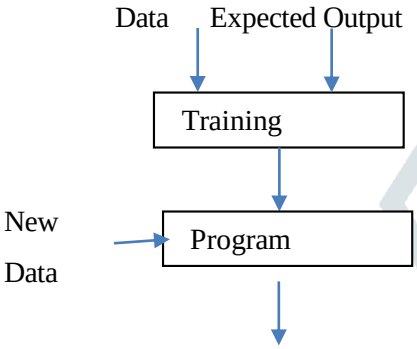
2.Artificial Intelligence:

AI is being applied in various applications to get insights into user behavior and makes data-driven suggestions like Virtual Assistants. AI is to make optimal decisions and discoveries in the time that would take the system.



AI (Perceptions, Actions)

3.Machine Learning and Deep Learning



1. Supervised Learning
2. Unsupervised Learning
3. Reinforcement Learning

Deep Learning will be used in various applications like Fraud detection, CRM, Computer vision, Vocal AI, Natural Language Processing etc.,

4. Nanomaterial Synthesis & Fabrication

Numerous studies of nano-fabrication of oxides nanostructures with varying morphologies, such as nanobelts, nanoribbons, nanowires, nanorods and thin films have been carried outover past two decades, revealed exciting new properties which are associated with size and morphology of the materials. These oxide nanostructures have a wide range of applications in optoelectronic devices, mesoporous materials, catalysis, solar cell, lithium-ion batteries and as anti-corrosive, anti-fouling & heat resistive coatings. However, the problems associated with the present technology is to synthesize nanostructures with precisely controlled size, composition and shape in a way that is economically and ecologically viable. It is required to utilize the emerging nano-fabrication techniques which are capable of precise and reliable synthesis of materials of interest at the nanometric scale. Therefore, systematic research, aiming to the development of a coherent, consistent set of methods which, could constitute a basis for a genuine bottom-up nano-fabrication paradigmis required.

Conclusion:

The level of proper implementation of Multidisciplinary research for stable and sustainable development, can be empowered by emerging technologies like AI, Machine Learning and Deep Learning.

References:

[1]. Innovation ecosystem: A conceptual review and a new definition – Ove Granstrand, M Holgersion – Technovation Volumes 90-91, Feb-Mar 2020

[2]. Internet of Things: TechPedia – J Salazan, S Silvestra First Edition 2017

[3]. Introduction to Emerging Technologies Tesfahunegn M, Girma D, Yonnasa T, Addis AbabaSience & Technology University 2011.

[4]. Introduction to Cloud storages: Community Workshop services CWS Dec 2015

[5]. Overview on synthesis of Nano particles – N Patil, B Rajveer International journal of current pharmaceuticals Research Mar 2021.