PROPOSAL DETAILS

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Technical Details :

Scheme :	Start-up Research Grant		
Research Area :	Computer Engineering (Engineering Sciences)		
Duration :	24 Months	**Contact No :**	+917207277782
Date of Birth :	19-Jul-1988		
Nationality :	INDIAN	**Total Cost (INR) :**	33,00,000

Project Summary :

Cyber-Physical Systems has contributed tremendously to the Industry, Agriculture, Environmental monitoring individually. The data collected from the physical systems through cyberspace plays a vital role in analyzing the biological systems' status. In India, Industry 4.0 has been poised to happen globally by incorporating cyber and physical automation and manufacturing methods. Smart Factory is the new manufacturing generation where the virtual copy of the biological systems is created, and decentralized decisions are taken by applying analytics. There is a need fully automation, which can be easily achieved by Industry 4.0 by Acquiring, Processing, and Applying analytics to improve the functionality. The proposed project aims to improve scalability, Early warning on possible problems, Energy Efficiency, and productivity of Industry, Agriculture, and Environment monitoring by providing a central analytical framework for multiple sectors. To achieve these, Cyber-Physical Systems are embedded with Cloud Computing environment and Big Data analytics. The proposed work is carried out in three-layer architecture. The lower layer is the Acquisition layer has three sectors: Industry, Agriculture, and Environment. Every industry is monitored individually by placing IoT Sensor. The middle layer where the data is gathered from every sector to the sensor hub, and it is pushed is Aggregation layer, which consists of some middle-ware technologies like IoT Gateways. The Cloud, where the unstructured data received from the Aggregation layer is stored and analyzed for scalability and compatibility, is regarded as the Analytics layer. The data received will be unstructured; it consists of data regarding the device status, information to be analyzed for the monitored sector, Software/ patch details, and some unwanted data. So, in the Analytics layer, Big Data Analytics and Machine learning algorithms are applied to make data meaningful and retrieve the necessary insights. The proposed architecture can be incorporated into any industry but not confined to a particular sector.

Objectives :

- To study and acquire knowledge about the industry, Agriculture, and Environmental Sectors
- To Establish Edge connectivity IoT sensors to acquire real-time data
- To Provide end-to-end connectivity establishment from sensors to cloud through Gateway
- To explore various data Analytics techniques that provide Insights for making decisions
- To provide a framework that can enhance scalability and security in real-time

Keywords :

Cyber-Physical Systems, Smart Farming, Smart Environment, Smart Factory, Internet of Things, Big data Analytics

Expected Output and Outcome of the proposal :

An Open-Source Bigdata Analytics Framework on Cloud for Smart Farming, Smart Environment, and Smart Factory in real-time decision making