



21AD21` - Fundamental of Industry 4.0

Mini Project [Group]

Deadline: Week 14(Friday)

Aim

The assessment aim is to apply IR4.0 concepts to design and develop prototype's for real time problem using cutting edge technologies.

Assignment Background

Industry 4.0 refers to a new phase in the Industrial Revolution that focuses heavily on interconnectivity, automation, machine learning, and real-time data. Industry 4.0 leads to a new industrial automation which integrates innovative technologies in order to improve working conditions for increasing productivity. The foundation for the next industrial age rests in digitalization. For instance, with the Cloud, factories and warehouses can be connected and share large amounts of data across sites and company boundaries within the span of a few milliseconds. This same decentralized technology is used to create a trusted, traceable and tamperproof way for people to submit their transactions, called blockchain. By using sensors [i.e. IoT concepts] and data analytics, machines can actually start "learning" how to be more efficient in their processes. This type of ability in technology is called artificial intelligence, which captures data, identifies trends and enhances the quality and performance of manufacturing plants. Processes and components can be standardized and digitally connected, turning the dream of the "smart factory" into a reality. The cutting-edge technologies includes a) artificial intelligence b) big data analytics c) augmented reality d) cybersecurity d) cloud computing e) internet of things f) blockchain g) robotic process automation h) digital twin etc.

The assessment focus is to identify a real problem that is faced by the society and design a solution that solves the problem that has a social impact. Team can choose any one of the below approaches to build the solutions.

- a) Open Source Microcontroller -Arduino or Raspberry Pi
- b) Firebird Mini Robots
- c) Open Source Mobile Application- App Inventor/ Android Studio

Assignment Tasks

A. Proof of Concept Development Task

Develop and submit an proof of concept by choosing any one of the approaches and preferred development platform for solving the real time problem.

B. Testing Task

Validate the proof the concept

C. Reporting Task

Write a report which includes problem statement, objectives, existing technologies, solution and future work.

D. Demonstration

Demonstrate the proof of concept based on developed system

E. Contribution Task

Report each member contribution in this assignment and assign weights for each contribution if there are TWO members in the team, contribution is equally shared (i.e. 50% + 50%)

Submission

You will only need to **submit 2 files** through Google Classroom before the **Week 15 - (FRIDAY)**. If any issues in submission, mail it to valliappan@cit.edu.in

- A. The source files for the Software Development Task(s). The name of your files must be team name assignment task. In the report, your team member name and student ID must be included.
- B. The report as .doc/docx/pdf file for the Reporting Task and Testing Task AND should contain:
- C. Video of the proof of concept demonstrated by the team and share the video link (i.e. you tube or any streaming link)

Marks Distribution

Criteria	Marks
TECHNICAL Prototype How well does the prototype work? Innovation How innovative is the project? Coding How well understand the coding?	30%
PROBLEM SOLVING (40%) Problem Statement How well understand the problem? Solution How accurate and consistent is the solution to solve the problem? Impact How impactful is the solution?	40%
LEARNING (30%) Communication How well understand their solution? Learning What is learned? Teamwork How strong is teamwork? Report and Video Submission	30%