

### Contest background:

- Team size of 3 members – cross discipline/ cross college allowed.
- 2<sup>nd</sup> & 3<sup>rd</sup> Year Engineering students from selected colleges to participate.
- Open to all engineering disciplines
- Time for submission of case solution: 4<sup>th</sup> -24<sup>th</sup> March 2024
- Time for evaluation: 25<sup>th</sup> March – 4<sup>th</sup> April 2024
- Grand Finale – 19<sup>th</sup> April (10 team presentations in person)
- Prototype is not mandatory.

### Topics – Problem Statements

1. Develop an algorithm using AI/ML to optimize the manufacturing process issues like reducing material waste, increasing machine productivity, reducing manufacturing cycle time, enhancing precision of for processes like machining, welding, etc.).
2. Develop a predictive modelling algorithm to facilitate monitoring and controlling of agile projects (for e.g., Software, application, web development, IT projects)
3. Develop an AI based model for monitoring construction equipment/assets utilization, productivity, and maintenance at construction sites.
4. Design a circular economy model for a Hi-Tech manufacturing company focusing on extended lifecycles, promoting reuse, and recycling, and minimizing the use of finite resources in supply chain, operations, logistics etc.
5. Develop a sustainable (environment friendly) construction approach focusing on alternative materials, sustainable construction methods & practices.
6. Prepare an AI based model for most cost-effective sourcing of materials like steel, cement, tiles, pipes, valves etc. along-with geotagging from ordering to supply.
7. Develop a statistical model that would help predict the labour productivity of key construction activities such as brickwork, formwork, reinforcement, concreting, etc.
8. Develop an AI model to understand the sentiments about the company using social media feeds (such as Twitter, Facebook, LinkedIn, and other digital media inputs).
9. Design a wireless Energy meter for effective Energy management and audit.
10. Design architecture for a multilingual automation system using Google Assistant and Raspberry Pi for Level & Pressure Control System.

### Full Case Solution Format as shared by UnStop

The suggested format for the case study is given below:

- **Problem Statement** – Comprehensive definition of the problem addressed (elaborating the practical need for solution as well)
- **Goals or objectives** – Outcomes expected through the case solution - Measurable parameters (expectations in quantifiable ways)
- **Recommended solution (provide details as applicable)–**
- Description of concepts, theories and/or approach involved in the proposed solution.
- Technical aspect of the proposed solution
- Detailed technical specifications and pictorial representations (block diagrams/ flow chart etc. whichever applicable)
- Description of the flow of operations demonstrating key features and functionality
- Performance estimate of the solution
- Experimentation/Verification done to establish the workability of the above
- A link to the video of the working model/ prototype

**Assumptions/ Constraints of Case Solution** – Assumption or constraints, if any.

**Novelty of Approach:** How is/will your solution be better than the existing products/solutions that address the same problem?

**Impact** – Results achieved/estimated/projected and comparison of results with goals and objectives. Actual findings, significant output of tests and analysis

#### Evaluation Criteria

**Creativity and Novelty:** How novel is the solution? How different is it from the current solutions available?

**Implementation Ability:** Is the solution implementable as described? Is it repeatable? Is the solution feasible for diverse and changing conditions/applications?

**Scalability:** Is the solution scalable to a higher level, how easy is it to scale up and what are the factors affecting it?

**Potential of Impact:** How does it benefit Customer, business, society etc.? The scale of problem that it solves, intensity of the solution and diverse stakeholders impacted from the solution directly and indirectly.