### **Innovative AI Challenge 2024: Problem Statements & Guidelines**

Welcome to the Innovative AI Challenge 2024! This competition is designed to inspire creativity, problem-solving, and the use of AI in real-world applications. Below are the detailed problem statements, expectations, deliverables, and guidelines to ensure your success.

## **Problem Statement 1: Enhancing Agricultural Productivity with AI**

**Objective:**

Develop an AI-based solution that helps farmers increase agricultural productivity by optimising one or more of the following areas:

1. Crop yield prediction
2. Pest and disease detection
3. Resource management (water, fertilizer, etc.)

**Instructions & Expectations:**

* Your solution must provide a practical approach to improving farm efficiency or sustainability.
* Design a solution that can provide actionable insights to farmers, such as crop recommendations, irrigation schedules, or pest control measures.
* Use open-source tools for AI model development (e.g., TensorFlow, PyTorch, scikit-learn).
* Focus on solving specific problems faced by small or medium-scale farmers in India.
* Create an interface or a small website to showcase your AI model.

**Deliverables:**

1. **Project Report**:
   1. Problem analysis, solution overview, methodology, and implementation steps.
   2. Include datasets used (public datasets or generated synthetic data).
2. **Code Repository**:
   1. Submit a GitHub repository link containing your code, clearly documented for replication.
3. **Demo Video**:
   1. A 3-5 minute video demonstrating the model’s working and output.
4. **Plagiarism Check**:
   1. Ensure originality by including sources for all data and methodologies.

## **Problem Statement 2: Building a Realistic Virtual AI Assistant**

**Objective:**

Create a conversational AI assistant capable of holding realistic, human-like conversations on selected topics such as education, health, or elderly support.

**Instructions & Expectations:**

* Use open-source frameworks such as GPT-based APIs, or Hugging Face Transformers.
* Ensure the assistant can engage users naturally and offer informative responses.
* Incorporate user intent detection, response generation, and context retention.
* Create an interface or a small website to showcase your AI model.

**Deliverables:**

1. **Project Report**:
   1. Describe the design of the conversational AI, datasets used, model architecture, and fine-tuning strategies.
2. **Code Repository**:
   1. A well-documented GitHub repository with instructions for setting up the assistant.
3. **Demo Video**:
   1. A 3-5 minute demonstration showcasing sample interactions with the AI assistant.
4. **Creativity**:
   1. The assistant should demonstrate a unique personality or innovative feature to distinguish it from common chatbots.

## **General Guidelines for Both Challenges**

### **Use of Open-Source Tools:**

* Use only open-source tools to ensure accessibility. Examples include:
  + **Data Processing**: pandas, NumPy
  + **AI/ML Frameworks**: TensorFlow, PyTorch, scikit-learn, Hugging Face
  + **Deployment Tools**: Flask, FastAPI, Streamlit

### **Creativity & Innovation:**

* Your project will be judged on originality, creativity, and the practicality of the solution.
* Avoid reusing existing solutions without adding significant value or innovation.

### **Plagiarism Policy:**

* All submissions will be checked for plagiarism. Any form of copying without proper credit will result in disqualification. Ensure your work is original and properly cited.

### **Evaluation Criteria:**

1. Innovation & Creativity (40%): Unique approach to solving the problem.
2. Technical Implementation (30%): Accuracy, performance, and completeness of the AI model.
3. Impact & Practicality (20%): Real-world applicability and relevance.
4. Presentation & Documentation (10%): Clarity of the report, code, and video demonstration.

## **Submission Details:**

* Submissions open on December 1, 2024.
* Deadline: January15, 2024, 11:59 PM IST.
* Submit your work via the competition portal. Link: <https://www.venusmoon.in/submissions>

## **Prizes:**

* ₹5,000 for the Best Creative & Innovative Solution (two winners).
* ₹1,000 for the Best Solutions (five winners).
* ₹500 for the Top 10 Next Best Solutions.

Prizes will be distributed via UPI. Teams are responsible for managing prize distribution among members.