#Instructions

- Please make a copy before you edit it: File -> Make a copy.
- Please find the problem statement and detailed template below.
- From where the template starts you will be allowed only 3 pages for the solution summary
- Please submit the final solution document with an access link in the submission form

Girl Hackathon 2025 - Software Engineering Track

[Do not edit this section. This is read-only]

Amplifying Human Potential using AI

Theme:

AI capabilities can now be used to automate traditionally creative or complex tasks, resulting in enhanced productivity and efficiency across diverse domains. AI can not only produce creative and intelligent multimodal forms of output, but can also orchestrate workflows and perform tasks as an 'agent', in its own right. This can take automation across various verticals to whole new heights and unlock tremendous levels of productivity and efficiency for everyone. This hackathon challenges participants to develop AI-driven solutions that accelerate processes, optimize workflows, and unlock new levels of human potential.

Participants are encouraged to create an application or enhance existing platforms to achieve the following goals: **[Choose 1 of the following]**

Problem Statements: [Choose 1 of the following]

- Finance: **A Tax Assistant** that can automate tax filing processes, simplifying complex calculations, identifying deductions, and minimizing errors.
- Medicine: **A Pharmacist's assistant**, that automatically matches orders against handwritten prescriptions and creates orders for patients or **a diagnostic assistant**, a solution that can analyze medical images, patient data, and symptoms to assist healthcare professionals in diagnosing diseases accurately and efficiently (using mock data).
- Enterprise: **Intelligent Process Automation**, AI solutions that can automate repetitive and time-consuming business processes, such as data entry, document processing, and customer service interactions.
- Developer Productivity: **Intelligent IDE** - automated generation of code, tests with advanced debugging capabilities (automagically suggest bug fixes) leading on to largely automated continuous build and integration processes.

Goodluck!

Submission:

Participants are required to create a PDF document as the final submission. The document should contain the link to a public GitHub repository (accessible and open to all).

The repository should have all the collaterals of the code, along with a README file. The code can be written in any open-source programming language using standard open-source libraries.

The README file should cover how to generate the environment needed to run the code, how to run the code, and any other necessary information.

Evaluation Rubrics:

- Potential Impact of Proposed idea (25%)

- Usage of correct DS/Algorithm and AI technique (40%)
- Code Quality (20%)
- Testing (15%)

Find Template to use below

(3 Pages Maximum from the template below)

2025 Girl Hackathon Ideathon Round: Solution Submission

Project Name: AI-Powered Diagnostic Assistant

Pariticipant Name: Atmakuri Hymavathi

Participant Email ID: ahymavathi2004@gmail.com

Participant GOC ID: **554110372992**

ReadMe File Links : https://github.com/atmakurihymavathi/AI-Powered-Diagnostic-Assistant/blob/main/README.md

Brief Summary

Medical diagnostics can be time-consuming and sometimes inaccurate due to human error. My project, AI-Powered Diagnostic Assistant, helps doctors by analyzing medical images and patient symptoms using AI. It provides quick and reliable disease predictions, helping medical professionals make better decisions while saving time.

Problem Statement

Doctors often rely on manual review of medical images and symptoms, which can be slow and prone to errors. Many healthcare facilities lack specialists, leading to misdiagnosis or delays in treatment. This project uses AI to assist doctors in diagnosing diseases faster and more accurately, improving patient care.

Design Idea and Approach

Technologies Used:

- **Deep Learning (CNNs):** For image processing and disease detection.
- **Natural Language Processing (NLP):** To analyze patient symptoms and match them with possible diagnoses.
- **Python:** Used for model training (TensorFlow/Keras, OpenCV, Scikit-learn).
- **FastAPI:** For backend services.
- **React.js:** For the user interface.

- **Cloud Deployment:** AWS/GCP for hosting the model.

New Components:

- A deep learning model to classify medical images.
- A symptom-based AI system to suggest potential diagnoses.
- A secure database for handling patient data.

Scaling and Security:

- **Handles large datasets** (chest X-ray, MRI images, etc.).
- **Optimized for real-time analysis** (results in seconds).
- **HIPAA-compliant** data security with encryption.

Rollout Plan:

1. Develop and test with public datasets.
2. Partner with hospitals for pilot testing.
3. Launch as a cloud-based service for healthcare providers.

Impact

This project will make diagnostics faster and more reliable, reducing misdiagnosis cases. It will be especially useful in remote areas where specialist doctors are scarce. By using AI to assist healthcare professionals, we can improve early disease detection and patient outcomes significantly.

Feasibility

I have access to open medical datasets and AI tools needed for this project. Collaborating with healthcare professionals will help validate the model. Cloud infrastructure will ensure scalability and accessibility for hospitals and clinics.

Use of AI

The project leverages AI to:

- Analyze medical images using deep learning.
- Process patient symptoms with NLP.
- Continuously improve through feedback from medical professionals.

Alternatives Considered

1. **Rule-Based Diagnosis:** Too rigid and lacks adaptability.
2. **Manual Doctor Review:** Time-consuming and inconsistent.
3. **Mobile-Only Version:** Limited processing power, so cloud deployment is preferred.

References and Appendices

- **Datasets Used:** NIH Chest X-ray Dataset, Kaggle medical datasets.
- **Github Repository:** https://github.com/atmakurihymavathi/AI-Powered-Diagnostic-Assistant.git