Functional Requirements

IEEE: 3.2 | ISO: Functionality

- Develop AI-powered solutions for real-time health data analysis and predictive analytics
- Design and deploy machine learning models for defect detection in PCB manufacturing
- Engineer IoT-based automation systems for real-time infrastructure monitoring
- Develop CNN-based AI models for ovarian cancer detection
- Create AI-driven real-time health monitoring systems
- Integrate machine learning models with Flask API for scalable real-time deployment

Non-Functional Requirements

IEEE: 3.3 | ISO: Usability

- Optimize model performance with hyperparameter tuning and data augmentation
- Achieve high accuracy rates (88%, 89%, 90%)
- Ensure scalability and production efficiency
- Improve patient care insights and operational efficiency
- Provide diagnostic transparency and transfer learning for enhanced generalization

Business Rules

IEEE: N/A | ISO: N/A

- Use AWS and Oracle Cloud services for cloud deployment and management
- Utilize TensorFlow, Keras, and OpenCV for AI and ML development
- Implement Explainable AI (SHAP, Grad-CAM) for diagnostic transparency
- Integrate IoT-based automation systems with MQTT for real-time infrastructure monitoring

Constraints

IEEE: 3.4 | ISO: Portability

- Limited timeframe for project completion (e.g., March 2024 - April 2024)
- Need for high accuracy rates in defect detection and health monitoring
- Requirement for real-time deployment and scalability

Assumptions

IEEE: 3.5 | ISO: Maintainability

- Availability of necessary resources (e.g., AWS, Oracle Cloud, TensorFlow, Keras)
- Access to relevant data for model training and testing
- Ability to integrate multiple technologies and frameworks (e.g., AI, IoT, Django)
- Availability of necessary expertise and support for project development