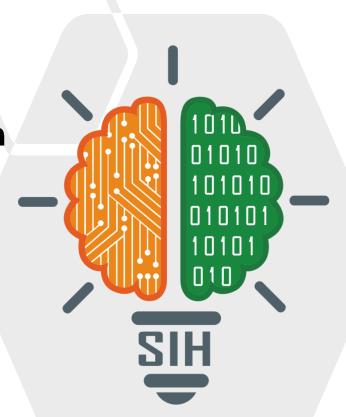
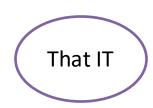
# **SMART INDIA HACKATHON 2024**



- Problem Statement ID –SIH1597
- ProbleStatement Title- student innovation
- Theme- medtech/biotech/healthtech
- PS Category- Software
- Team ID-
- Team Name (Registered on portal):THAT IT





## **CARDIOSHIELD**



#### **Proposed Solution:**

- Utilizes AI and machine learning algorithms to analyze patient data and predict heart attack risk.
- Combines data from multiple sources, such as EHRs, imaging, and wearables, for comprehensive risk assessment.
- Provides personalized risk predictions and early warnings to healthcare providers for timely intervention.

#### **How It Addresses the Problem:**

- Identifies high-risk patients before symptoms manifest, enabling early preventive measures.
- Improves clinical decision-making with accurate, data-driven insights.
- Reduces the number of heart attacks and healthcare costs associated with emergency treatments.

### **Innovation and Uniqueness:**

- Leverages deep learning and explainable AI for precise and transparent predictions.
- Integrates diverse data types to offer a holistic patient health overview.
- Provides real-time, personalized insights, enhancing preventive cardiology strategies.



### **TECHNICAL APPROACH**



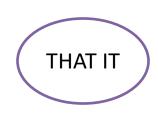
- Data Collection and Integration
- Data Preprocessing
- Feature Engineering
- Model Development
- Explainable AI (XAI)
- Model Training and Validation
- Continuous Learning and Monitoring:



# FEASIBILITY AND VIABILITY



- **Data Availability**: Access to large healthcare datasets and growing use of EHRs and wearables facilitate data collection and integration.
- Advancements in Technology: Recent developments in machine learning and cloud computing make model development and deployment practical and scalable.
- **Infrastructure:** Cloud platforms provide the necessary infrastructure for handling large volumes of data and real-time processing.
- **Regulatory Compliance:** Data privacy and security measures can be implemented to adhere to regulations like HIPAA and GDPR.
- **Cost-Effectiveness:** Early detection and prevention reduce healthcare costs by minimizing emergency treatments and hospitalizations, aligning with preventive medicine trends.



### IMPACT AND BENEFITS



**Early Detection:** Allows for timely identification and intervention for high-risk individuals.

**Personalized Care:** Delivers tailored risk assessments and treatment recommendations based on individual health data.

**Reduced Healthcare Costs:** Minimizes the need for costly emergency treatments and hospitalizations.

**Enhanced Clinical Decision-Making:** Provides accurate, data-driven insights to improve diagnosis and treatment planning.

**Improved Patient Engagement:** Offers actionable information that encourages patients to participate actively in their health management.



# RESEARCH AND REFERENCES



- 1. "AI in Cardiovascular Disease" (Journal of the American College of Cardiology)
- 2. "Machine Learning in Healthcare" (Nature Medicine)
- 3. "Deep Learning for Predicting Cardiovascular Risk" (Circulation)

#### AN ARTICLE PUBLISHED BY:

- 1. Faculty of Computer Science, Kazimierz Wielki University, 85-064 Bydgoszcz, Poland; piotr.kotlarz@ukw.edu.pl (P.K.); miroslaw.kozielski@intive.com (M.K.);
- 2. zbyszko.krolikowski@ukw.edu.pl (Z.K.) 2 Faculty of Automatic Control, Electronics and Computer Science, Silesian University of Technology, 44-100 Gliwice, Poland;
- 3. mieczyslaw.jagodzinski@polsl.pl \* Correspondence: izabela.rojek@ukw.edu.pl AN