ENICARTHAGE المدرسة الوطنية للمهندسين بقرطاج Ecole Nationale d'Ingénieurs de Carthage

IEEE Tunisia Section

IEEE COMPUTER SOCIETY ENICarthage Student Branch

IEEE ENICARTHAGE STUDENT BRANCH

IEEE COMPUTER SOCIETY Tunisia Chapter

CSTAM2.0

IEEE Tunisia Section Entrepreneurship Local Group

IEEE CSTAM2.0 Technical challenge

TechHeal

SCOPE & TOPIC:

In a world where healthcare is increasingly digital, this challenge explores the intersection of **cloud computing, generative AI, and secure mobile/wearable innovation**. Developing **AI-powered health and nutrition companions** that leverage cloud infrastructure to provide real-time insights, wellness prediction, and lifestyle coaching.

All while ensuring **data privacy, inclusiveness, and scalability** is our Interest !

CHALLENGE OBJECTIVE:

Develop a cloud-native, GenAI-powered mobile and/or wearable application that delivers personalized health and nutrition guidance by analyzing meals, physical activity, and wellness data, while ensuring secure data processing, ethical AI integration.

The solution should enable:`

- Real-time health analysis and wellness prediction
- Personalized fitness or dietary recommendations
- Scalable cloud infrastructure
- Readiness for real-world deployment and startup incubation

TECHNICAL INSTRUCTIONS & DELIVERABLES:

1. Cloud-Integrated Prototype

- A mobile or smartwatch application (or simulation) showcasing core GenAI health features
- Must include at least one generative AI use case (e.g., meal interpretation, personalized coaching)

2. Data Collection

- Identify the **types of data** your app collects (e.g., images of meals, user health history, sensor data, fitness tracker inputs)
- Specify **collection methods:** manual input, wearable sensors, API integrations, photo capture, etc...
- Ensure appropriate **user consent** mechanisms and adherence to **data ethics**

3. Data Processing Pipeline

- Explain how collected data is **cleaned, transformed, and prepared** for AI model consumption
- Highlight any preprocessing steps (e.g., image resizing, feature extraction, tokenization, normalization)
- Outline how data is **transferred to and from cloud services**, ensuring privacy and real-time usability

4. Cloud Storage & Integration

- Show how data is stored and retrieved using **cloud infrastructure** (e.g., Firebase, AWS S3, Azure Cosmos DB)
- Include security practices like **data encryption, IAM roles, and backup strategies**
- Emphasize modularity and scalability of your cloud design

5. System Architecture Diagram

- End-to-end system diagram including frontend, cloud components, GenAI model(s), and data pipelines
- Label third-party services (e.g., cloud functions, ML APIs) and their roles

6. Security & Privacy Design

- Detail methods for ensuring secure data access, storage, and transmission
- Include privacy-preserving mechanisms (e.g., anonymization, encryption at rest and in transit)
- Demonstrate alignment with GDPR, HIPAA, or other relevant regulations

PS . Free Tools & Workarounds

- **Data Storage:** Use MinIO (S3-compatible, Docker-ready) as a free local alternative to AWS S3. Swap credentials later for deployment.
- **AI APIs:** Tools like DeepSeek offer free GenAI APIs for NLP and health logic.
- **Cloud Simulation:** Local setups (MinIO, mock APIs) are accepted. Just explain what cloud services they simulate.
- **Student Credits:** Use your **GitHub Student Pack**

ENTREPRENEURSHIP INSTRUCTIONS & DELIVERABLES

1. Business Plan (including a complete Business Model Canvas - BMC)
2. Proof of Concept (POC)
3. Pitch Deck
4. Promotional Video showcasing the product

Bonus Points (Optional Enhancements):

Additional points will be awarded for teams that go beyond the basics and provide any of the following:

- Marketing Campaign (offline or online)
- Digital Marketing Strategy
- Other entrepreneurship-related initiatives (e.g. branding, customer validation, etc.)
- Join Entrepreneurship LG Workspace on Collabratec: 0.5pt per member (maximum 2 points)

SUBMISSION :

- Submission form link : Link

RULES & CRITERIA :

- Teams of 3 (minimum) to 5 members (maximum).
- Open for IEEE and Non-IEEE students

PITCHING DURATION : 5 mins

PITCHING LANGUAGE : ENGLISH

WINNERS :

- Number of winners : 3 Teams
- Prizes : will be announced later

Important Date :

- Submission deadline : 08 Nov. 2025

For any inquiries or clarifications, please contact us at cstam@ieee.tn