CODE CHALLENGE
CHAMPIONSHIP

2025

AI TRACK

RULES & GUIDELINES

Table of Contents

1. Introduction

1.1. What's AI?

AI is the science that concerns how to simulate the human's intelligence in machines to be able to make decisions without being explicitly programmed to do so. The power of AI lies in its ability to replicate and even surpass human intelligence in certain domains. By harnessing advanced algorithms, massive datasets, and computational power, AI systems can analyze information, recognize patterns, and make decisions with incredible speed and accuracy.

1.2. Why learn AI?

- High demand in the job market with high salaries
- Highly versatile and applicable across various fields
- Being involved in shaping a better world
- Applying automation to boost your productivity
- Saving time, effort, and huge costs

1.3. Does that track suit you?

If you want to be one of the future AI engineers that can utilize AI efficiently to simplify our lives and solve real-world problems, this will be the ideal track for you to start your unique professional journey!

1.4. Track Guidelines

1. For the junior and senior age groups, PictoBlox will be used. As a result, teams must install all the required dependencies to be able to use the ML environment before the competition day. The default coding environment in PictoBlox is block-based. However, using the Python coding environment instead will give the team a bonus score. Finally, it's highly recommended to sign in and make a PictoBlox account for smoother usage and earn your credits.
2. For the adult age group, VS Code or Jupyter notebook will be used. As a result, the following Python libraries must be installed before the competition day (NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn, OpenCV, LangChain, google-generativeai).
3. Using AI tools (eg. Github Copilot, ChatGPT, DeepSeek, etc.) are not allowed.
4. Copying code from external sources or using pre-written solutions is strictly prohibited and will lead to team disqualification.

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2. Categories

2.1. Junior Category

This category is designed for students aged **10–13** years. Topics covered are:

- Face detection
- Image classification
- Human body detection
- Hand pose detection
- QR code scanner
- Pen drawing
- Data logger
- Recognition cards

2.2. Senior Category

This category is designed for students aged **14–17** years. Topics covered are:

- All topics covered in the junior category
- Audio classification
- Object detection extension
- Number classification/regression
- ML model evaluation metrics (eg. accuracy, precision, loss)
- Natural Language Processing

2.3. Adult Category

This category is designed for students aged **18–24** years. Topics covered are:

- Importing data from various sources (eg. csv, excel)

- Data preparation (eg. handling missing values, class balancing)
- Exploratory Data Analysis (EDA)
- Classical ML (Linear regression, Logistic regression, SVM, Decision tree, Random forest)
- Computer Vision (Image classification, Object detection, Hand pose detection)
- Transformers (Utilizing LLMs, Calling APIs, Creating prompts)
- Regularization techniques
- Model evaluation metrics and testing

On the competition day, the adult teams will face 3 different topics challenges as follows:

1. A challenge needs to be solved using classical ML algorithms.
2. A challenge focuses on utilizing computer vision (eg. Image classification).
3. A challenge tests your prompting skills to communicate with LLMs through APIs.

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3. Judging Criteria

3.1. Code Completeness & Correctness

This section is worth **50 points** and aims to evaluate how effectively your code solves the given problem based on 2 questions as follows:

1. **Does the code solve the provided problem? (40 points)**
    - Our scoring system will verify whether the team satisfies all mission requirements.
    - Each mission will test 4-8 key concepts as mentioned in the targeted age group, with the 40 points divided equally among them, for example 10 points per concept (for 4 concepts).
2. **Does the code contain errors or bugs? (10 points)**
    - Our scoring system will examine the code carefully to see if it contains any errors or bugs.
    - If no errors are found, 10 points will be given or 0 points otherwise.

3.2. Code Readability & Organization

This section is worth **15 points** and assesses the quality and cleanliness of your code based on the following 2 questions:

1. **Well-named (variables, functions, etc.) are used? (5 points)**
    - Our scoring system will examine the names of variables, functions, classes (if exist) to see whether they are descriptive and relative to the proposed mission.
    - For each non-descriptive or non-meaningful name found, the score will be decreased by 1.
2. **Contain comments for clarity and explanation? (10 points)**
    - Our scoring system will search for the team's code for comments and function docstrings (if a function exists) that must describe the code written.
    - For each 5-8 lines/blocks, a comment must be found explaining what's happening, otherwise, the score will be decreased by 1.

3.3. Judging & Code Explanation

This section is worth **25 points** and will be evaluated by a panel of 2 experienced judges based on the following 2 questions:

1. **Is the team able to explain their provided solution? (10 points)**
    - Judges will evaluate the explanation of the team to the solution provided to ensure they understand every part of it.
    - Each judge will give the team a score of 10 then the final score will be the average of the 2 judges' scores.
2. **Is the team able to answer the judges' questions? (15 points)**
    - Judges will ask 3 technical questions relevant to the mission provided.
    - Each correct answer, the team will get 5 points.

Note: For the junior and senior age groups, there will be 1 question out of the 3 questions, regarding the implementation of the code. If the team used Python, and were able to explain its logic, this is their bonus.

3.4. Bonus Part

This section is worth **10 points** and will be evaluated as follows:

1. **Did the team make the bonus part of the mission? (10 points)**
    - Our scoring system will examine whether the team made the bonus part correctly or not.
    - If they solve the bonus part correctly, they will receive 10 points, otherwise, they will get 0.