CONTEST PUBLIC NOTICE

HI TECHNOLOGIES LTDA., a corporation, with head officers in the City of Curitiba, State of Paraná – Brazil, at Rua Eduardo Sprada 6400, CIC, enrolled with the National Register of Legal Entities of the Ministry of Finance ("CNPJ/MF") under 07.111.023/0001-12, herein represented in accordance with its bylaws, published tis public notice containing norms and regulations applicable to all the registered competitors.

INTRODUCTION

The world currently suffers from global COVID19 pandemic. Billions of people have been impacted, and millions of casualties have already occurred. Nevertheless, such numbers continue to increase as a new vaccine is still not made available.

Therefore, it is of extreme importance to identify individuals who are or have been contaminated by the SARS-CoV-2 virus. Such an identification aids public health organizations and governments to plan actions to reduce the impacts of such a pandemic.

In such a sense, Hilab is a remote laboratory company from Brazil which has thousands of blood scanner points distributed along the country, mostly on hospitals and pharmacies.

The company has received great attention in the country due to its fast exam time, including for the detection of COVD19, in which the patients receive the exam's certificate in approximately 15 minutes.

Once the blood sample is collected from the patient, it is digitalized and sent to a central laboratory in the city of Curitiba (Brazil), where expert biomedicians analyze the samples and indicate if the patient is infected.

Given the technology of the equipment, where blood samples are digitalized, and the high number of exams, enough data has become available to build strong machine learning models.

Such models can aid the decision making process of the expert biomedicians, enabling a more accurate detection of blood infections.

Therefore, the rpesent competition has been proposed, with the goal of building machine learning models with high accuracy and confidence for COVID19 infection detection.

1- THE COMPETITION

1.1. To improve the detection of COVID19 in individuals, Hilab proposes a competition on the difficult task of **classifying blood contamination** using available processed data collected with the blood scanner and labeled by the expert biomedicians.

1.2. The teams shall build a machine learning model with high confidence and accuracy for COVID19 detection in blood samples.

2- REGISTRATIONS

2.1. Competition registrations shall be performed by may 31st 2021 at https://hilab.com.br/competition/ .

2.2. Registrations are free of charge, where each team shall include at most 5 competitors.

2.3. The competitors will receive the competition instructions once they perform the registration.

3- DATA SET

3.1. Hilab will make available a single dataset, composed of thousands of labeled samples, which can be used by the competitors to train and validate their models.

3.2. The dataset composes a binary classification problem, which must be correctly predicted given a multi-dimensional input.

3.3. A link to the dataset will be sent to the competitors upon registration.

4- SUBMISSION

4.1. The submission consists on a python package (a template package will be made available) containing the source code for the preprocessing and the classification steps.

4.2. Teams can be composed of a maximum of 5 individuals, according to item 2.2.

4.3. Teams must submit their solutions according to the instructions received upon registration by May 31st 2021.

5- EVALUATION METRICS

5.1. Solutions will be evaluated with a test dataset, which is notavailable for the competitors. The final score will be assessedusing the Macro F1 score, computed as follows:

$$Macro\ F_1 = \frac{1}{C} \sum_{c=1}^{C} \frac{2 \cdot TPR_c \cdot PPV_c}{TPR_c + PPV_c} \qquad (1)$$

$$TPR_c = TP_c/(TP_c + FN_c) \qquad (2)$$
$$PPV_c = TP_c/(TP_c + FP_c) \qquad (3)$$

where TPRc is the recall and PPVc is the precision for class c.

6- INSTRUCTIONS

6.1 The template's zip folder contains the submission template for the competition;

6.2. The scripts will run on a docker container without access to the internet;

6.3. The csv test file (test.csv) in this folder is a copy of the train_1.csv file, and is only provided to the competitors to test the submission script;

6.4. The competitors must update the file classifier.py with the data processing and classification methods. Most specifically, the initialize_classifier and predict functions are called by the scoring system (modifications to the scoring.py file will not be loaded);

6.5. The competitors can also update the requirements.txt file to load additional packages used by classifier.py;

6.6. The competitors can include supplementary files (additional packages and models) in a file named supplementary.zip, which will also be loaded and automatically extracted by the scoring system;

6.7. All other files submitted by the competitors will not be loaded by the scoring system;

6.8. The competitors must submit a zip folder containing the files in a structure similar to the submission template;

6.9. Source code and files of the submission will be analyzed and executed by the organizers, which will e-mail the team members indicating whether the submission has run successfully;

6.10. If the organizers find malicious code in the submitted files, the team will be automatically excluded from the competition, the organizers can, at their own exclusive criteria, send an e-mail to the competitors regarding the irregularity;

6.11. Each team has a limit of 10 submissions;

6.12. The final results and the winning team will be announced at the competitions session from IJCNN;

6.13. Question regarding the submission can be sent to the organizers, according to the competition site (www.hilab.com.br/competition).

7- RESULTS

7.1. Final results with scores for the competitors will be made available during the competition's session at IJCNN, where the best solution (Highest F1 score) will receive a prize of US$ 1,000.00, to be split among the team.

7.2. The final results will be made available between July 18th and 22nd, according to the official schedule of the International Joint Conference of Neutral Networks - IJCNN (https://www.ijcnn.org/).

8. ORGANIZERS

8.1. The competition's organizers are:

1. Gabriela Steinhaus

2. Guilherme Calesco

3. Marcelo Cossetin

4. Marcus Figueredo

5. Raynne Andrade

6. Victor Henrique

9- GENERAL DISPOSITIONS

9.1. Questions regarding the competition, as well as clarifications and impugnations regarding this public notice, can be sent by e-mail to:

vitor.ribeiro@hilab.com.br

9.2. Impugnations to the final results shall be exlucively sent to the email: juridico@hilab.com.br at the maximum deadline of 48 (fourty-eight) hours after the results are revealed.

Curitiba, February 24th 2021.

HI TECHNOLOGIES LTDA.