Competition-Description

Taiwan has a long history of orchid cultivation and various species, and its production and quality are internationally recognized. Taiwan is one of the world's leading R&D centers for orchid breeding. It also has the largest number of phalaenopsis orchid species in the world. Around 90% of the phalaenopsis orchids are exported, making it the most expensive domestic farming export. However, due to the advancement of agricultural biotechnology, the propagation of a large number of tissue seedlings has affected the research and development of new species, and other countries have actively invested in breeding production, and most of the breeders have their varieties that they focus on cultivating. Due to the similarity of the orchid species, professionals are often required to distinguish between them, and there is currently no software and technology to identify phalaenopsis species worldwide. This competition aims to organize an orchid species identification and classification contest; therefore, we invite high-school students, university students, and professionals with expertise in AI, machine learning, and deep learning to train orchid image recognition models with high recognition rates, which will not only enhance the competitiveness of the industry but also allow the public to have a better understanding of orchids as a high economic crop and further increase the sales and production value of phalaenopsis orchids.

Rules for Registration:

1. Anyone over the age of 18 can sign up to participate, and minors under the age of 18 can sign up with the consent of their legal guardian. (Except for employees of Trend Micro Inc., OX ORCHIDS NURSERY CO., LTD., HONG LIANG FU BIOLOGICAL TECHNOLOGY COMPANY, and YUSA FARM CO., LTD.).
2. People from the community can also participate, but the community group cannot receive certificates and bonuses from the Ministry of Education but can receive industry sponsorship bonuses and awards from the Project Office.
3. The number of participants in each team can range from 1 to 5.
4. Participants can only join one team and cannot change teams once they have joined.
5. After the application deadline, the list and number of team members cannot be changed.
6. Teams may not be combined or divided during the competition.
7. For those who participate in the competition based on the requirements of the school curriculum, please follow the rules of the school curriculum in naming the teams for the purpose of classroom grading.

Register method

1. Each team member is required to register at " T-Brain AI 實戰吧 " (https://tbrain.trendmicro.com.tw/) with a Google or Facebook account.

2. Each team member must log in to the "Registration System" and fill in the information of each team member according to the items shown on the registration page (Note 1), and complete the team formation process to register for the competition.

3. Team members will be able to participate in the tournament at the "T-Brain AI 實戰吧" after 1~2 working days of completing the tournament registration in the "Registration System."

4. After registration, please help each participant fill out the " Orchid Species Identification and Classification Contest: Pre-Competition Questionnaire."

Note 1: Please refer to the registration process of the AI CUP registration system for registration guidelines. Please fill in the email of each team member registered in " T-Brain AI 實戰吧". If the email filled in the registration page does not match the email of " T-Brain AI 實戰吧," the registration will be considered unsuccessful.

Eligibility Rules for Award and Methodology:

1. There are two categories: student, non-students/professionals. The student division requires all teams to be students; if there is a non-student on the team, the team will be classified as a non-student team.

2. Student Group Ranking Award: The winning team agrees to assist the organizer with the following arrangements, otherwise they are disqualified from receiving the award.

   i. All members of the team must be enrolled in a school in the R.O.C. on the date of registration in order to be eligible for the student category and to present the relevant proofs at the time of award presentation.

   ii. The prize money will be paid in New Taiwan dollars, and the winning team should pay the relevant income tax in accordance with the tax laws of the Republic of China.

   iii. A certificate will be presented to the mentor professor of the winning team of the "Student Ranking Award." Please fill in the name, school, department, and email address of the supervising professor in the final report.

3. Description of award eligibility :

i.   The final score is measured by the following components.
1.   The team's score in Public Dataset accounted for 30%.
2.   The team's score in the Private Dataset accounted for 70%.
ii.   Teams whose total score exceeds the baseline are required to submit a report by the specified deadline. The report must include (but not be limited to): pre-processing code, training code, identification code, setting of parameters (including training weights), execution environment, and a detailed description of the model size, time, number of parameters, and memory usage in the report. The code must be reproducible, and the original code can be verified by the model. The code must be in Jupiter notebook format and can be run in Google Colab as a live program to verify the correctness of the program. If there are significant impediments to providing a Colab-executable program and the jury meeting agrees, the code can only be submitted in other formats.
iii. The report is reviewed using a qualification process, and the evaluation criteria include the following sections :
1.   Report Completeness
2.   Report Accuracy
The report was reviewed by an evaluation team composed of expert members from the Office of Artificial Intelligence Competition and Marking Data Collection Program, Ministry of Education.

iv.   The winning team of the student group will receive a certificate from the Ministry of Education after being approved by the evaluation committee of the organizer. The non-student group cannot receive certificates and bonuses from the Ministry of Education but can receive an electronic certificate from the Office of the Artificial Intelligence Competition Program of the Ministry of Education, as well as industry sponsorship bonuses.
v.   The number of awards can be adjusted according to the number of entries and results. If the entries are not up to the standard, the selection committee of the organizer may decide whether to be vacant or not enough.
vi.   The winning team should appoint at least one representative to participate in the subsequent award presentation according to the organizer's notice. If there is no teammate to assist, a friend or relative can attend the award presentation and share the presentation.
vii. Due to the requirements of registration qualification review and award

information review, please confirm that the name of the T-Brain registered account is the correct Chinese name. If necessary, you can make corrections in the My Profile function of the T-Brain account.

viii. Trend Micro Sponsors Model Performance Award and Model Design Creativity Award: The winning team agrees to assist the organizer with the following arrangements, otherwise they are disqualified from receiving the award.

1. The judging principle is based on the "potential to publish a seminar paper," and the content may include, but is not limited to, problem statement, method optimization, innovative ideas, etc. The three major directions of completeness, accuracy, and originality of the report are also taken into consideration. If the evaluation criteria are not met, the award may be vacant.

2. This award does not count leader-board points and rankings. If the winning team is also eligible for other awards, they may be awarded the Student Group Ranking Award or Corporate Sponsorship Award at the same time.

3. At least one member of the team must have R.O.C. nationality or R.O.C. work or student visa in order to be eligible for the general group prize.

4. The prizes will be paid in New Taiwan dollars. Team members who meet the entry requirements and are eligible to receive the prizes should send a representative with a local New Taiwan dollar account to receive the prizes and use the team member as the R.O.C. tax return preparer to sign the documents related to taxation and use of personal information in accordance with the regulations.

ix. Trend Micro Student Pre-Employment Award: The winning team agrees to assist the organizer with the following arrangements, otherwise they are disqualified from receiving the award.

1. This award is sponsored by Trend Micro. All members of the winning team must be enrolled in a school in the R.O.C. at the time of application, and each member of the team is eligible for the award.

2. The award does not count leader-board scores and rankings. Student teams whose final scores exceed the baseline will submit their ideas and practical documents according to the prescribed format and timeline, and the winning teams will be selected by an evaluation team composed of expert members from the Office of

Artificial Intelligence Competition and Data Collection Program, Ministry of Education.

3. The report should contain the content items specified by the organizer, and the evaluation principles include three major aspects :

    I.   Report presentation structure and fluency

    II.   Effective use of resources to solve problems

    III.   Subsequent optimization or improvement proposal

4. After the competition, Trend Micro will take the initiative to contact all eligible team members to see if they have received a pre-employment letter and will explain the details of sending the pre-employment letter and how to use it. Awardees of the Trend Micro Student Pre-Employment Award will report to Trend Micro with their pre-employment letter and will be paid an additional $10,000 in incentives in accordance with the pre-employment letter.

x.   Corporate Special Award: The winning team agrees to assist the organizer with the following arrangements, otherwise they are disqualified from receiving the award.

1. The score is based on a 50% accuracy rate and 50% Macro-F1 score of the company's specified species. The team with the same score and the earliest submission time will be the winner.

2. The three enterprise awards will not be given repeatedly (a team can only receive one enterprise award at most).

3. The prizes will be paid in New Taiwan Dollars. Team members who meet the entry requirements and are eligible to receive the prizes should send a representative with a local New Taiwan dollar account to receive the prizes and use the team member as the R.O.C. tax return preparer to sign the documents related to taxation and use of personal information in accordance with the regulations.

xi.   After registration, please help each participant fill out the " Orchid Species Identification and Classification Contest: Pre-Competition Questionnaire."

Grading Criteria

1. Please use .csv file for file submission, and the format of the content must comply with the competition format. Please use UTF-8 (no BOM file header) encoding and Unix system line feeds for file uploads. Please do not use other Non-Printable Characters to avoid the possibility of scoring failure.

2. During the second phase of the competition, teams will receive two test datasets, Public Dataset and Private Dataset. The scores of the Public Dataset will be presented in the Submission History and Public leader-board after the scoring process, while the scores of the Private Dataset will be shown in the Submission History and Private leader-board on the next day after the competition.

3. The final results of the competing teams will be evaluated in the following sections.

   I. The team's score in Public Dataset accounted for 30%.

   II. The team's score in the Private Dataset accounted for 70%. Teams whose total score exceeds the Baseline will submit the model description, method report, and Colab code before the announcement deadline and will be qualified for the award only if the majority of the jury meeting determines that the report is complete and the program is correct.

4. If multiple answers are uploaded, the final score will be based on the highest Public Dataset score (i.e., the scores of the Public Dataset and Private Dataset answers will be used as the basis for calculating the score according to the above-mentioned scoring criteria). If the team has multiple Public Dataset scores, the score of the last uploaded answer shall prevail.

5. The two columns of the answer are separated by a comma, and there should be no blank space between them. The uploaded answer file must include both Public Dataset and Private Dataset answers to avoid affecting the final score calculation. Please refer to the Submission Template file provided by the organizer for the format of the uploaded answers.

Grading Method

The grading scale is described below:

Competition Rules

1. The competition will be executed in the following stages:
   ➢ Phase I: Announcement of Public Training Set, modeling training by each team.
   ➢ Phase 2: Public Dataset and Private Dataset will be published. Both datasets do not contain data tags, and participants are required to upload their answers to the platform within the time limit. The scores of both the

Public Leaderboard and Private Leaderboard will be included in the calculation of the total score, and the results of the Private Leaderboard will be announced the next day after the competition. Teams with total scores exceeding Baseline will be announced the next day.

2. The maximum number of submissions for the second stage is 5.

3. Teams may use their own data or additional open-source resources to enhance the model training results but must use machine learning/deep learning methods for orchid recognition. Any manual correction of the identification results is prohibited. If additional open-source data is used, the source must be provided in the written report submitted at the end of the competition. In case of disputes, the organizer reserves the right of final decision.

4. The training phase is not limited to the use of platforms, but after the competition, the actual program that can be run on Google Colab, including (but not limited to) pre-processing code, training code, identification code, setting of parameters (including training weights), and execution environment, must be submitted and described in detail in the report, and the executability and verifiability of the program will affect the eligibility for the award. If the Colab program is unavailable due to major impediments and difficulties, and the jury meeting agrees, the program code can only be submitted in other forms. Payment will be made by providing a link to the report and the program's cloud drive for download by the organizer.

5. The answers uploaded by the contestants must not be artificially corrected to avoid affecting the fairness of the contest.

6. Programs and features cannot be shared privately but can be discussed publicly in official forums.

7. If necessary, the organizer reserves the right to adjust the data set during the competition.

8. The Organizer may disqualify a participant from receiving a prize without informing the participant if,
    1. There is concrete evidence of plagiarism, cheating, or fraud on the part of the team.
    2. There is concrete evidence that the team has violated the intellectual property rights of others.
    3. There is concrete evidence that the team in question has attacked the leader-board system.
    4. There is concrete evidence of unfairness caused by the team's influence on other teams.
    5. There is concrete evidence that the team in question has violated the contest rules, or the terms of use of the "T-Brain AI Battle Bar Platform

Service," or the terms of use of participants in the "Search for the Flower of the Year - Orchid Identification and Classification Contest."

9. The organizer reserves the right to interpret the rules of the event and the competition.

Competition Schedule

Project	Schedule	Description
Application Procedure	2022/03/07 - 2022/06/02	3/7 Open Application, 4/1 Competition Start.
Training Dataset	2022/04/01 - 2022/06/06	Stage 1: 1. Teams can download the competition Training Dataset on the same day as the official start of the competition and test it on their own without the restriction of the platform according to the published competition criteria. 2. At this stage, T-Brain does not provide an answer uploading and scoring function.
Competition Test Set Download and Score	2022/06/06	Stage 2 : 1. Competition test data set download schedule: Starting from 5/30 10:00 am, teams can download two test datasets (Public Dataset and Private Dataset), and the decompression code will be announced on the official website at 9:00 am on 6/6. Note: Please download in advance to avoid the download spike, so as not to affect the use of the competition time. 2. Contest Test Set Answer Upload and Grading Schedule: 6/6 9:00 am to 5:00 pm, 8 hours. The maximum number of uploads is 5. *Note:* The uploaded answer file must include both Public Dataset and Private Dataset answers to avoid affecting the final score calculation. 3. During this period, participants can obtain the scores of the Public Dataset for reference, while the scores of the Private

		Dataset will not be published. 4. Contestants are required to submit their answers within the time limit and the format of the answers must comply with the instructions of the scoring method.
Announcement of Results	2022/06/07 14:00 PM	1. Announcement of Private Leaderboard (ranking is based on the Private Dataset score of the highest Public Dataset score) 2. Announced the final list of teams that exceeded baseline's total score.
Submission and uploading report	2022/06/07 - 2022/06/17	1. Teams whose total score exceeds the baseline are required to submit a live program that can be run in Google Colab, including (but not limited to): pre-processing code, training code, identification code, setting of parameters (including training weights), execution environment, and a detailed description of the model size, time, number of parameters, memory usage, etc. The executability and verifiability of the program will affect the report score. 2. If the submitted works are judged and found to be in violation of the competition rules, the team will be disqualified from receiving the award and will undergo the relevant retroactive procedures.
Announcing the list of groups participating in the competition launch	2022/08/01 10:00 AM	The finalists were announced on the T-Brain platform.
Competition Commencement and Award Ceremony	Tentative 2023/03	Details of the award ceremony will be announced separately.