

AiSpace Challenge

OFFICIAL RULEBOOK

“Advancing Space Exploration with AI”

October 2021- April 2022

Challenge overview

This is the initial round of a competition focused on the topic of utilization of Artificial Intelligence (AI) in outer space. Undergraduate students at accredited universities, polytechnics and technical institutes from all ASEAN countries and Taiwan will be given the opportunity to utilize ICE Cubes’ “AI Box”, located on board the International Space Station, and take advantage of the world smallest AI Supercomputer for Embedded and Edge Systems and various sensors in order to collect, analyze and process data from the ISS environment using self-created algorithms.

The main objective of the challenge is to give students and universities from participating countries the opportunity to incorporate space into their STEM education curricula – yet not only as an abstract asset, but as an asset to work in/with, allowing for effective translation of theoretical knowledge into practice. This could have great implications for increasing still rather insufficient knowledge about the potential of space utilization and the positive impact of space activities on socioeconomic well-being in participating countries. This challenge also aims for raising the level of STEM education in these countries and for supporting the creation and development of indigenous human capacities that could, by taking part in the challenge, gain invaluable skills both in the field of AI and space science. Building human capacities in these and other fields would allow countries to explore new markets, applications, and to achieve global competitiveness in AI and space-related endeavors.

The purpose of the Challenge is to engender new, meaningful and credible student research projects in the emerging field of AI in space, and to support the presentation of the most promising projects in an international forum including explicit recognition of the best two projects with a formal prize.

I Topic of the Challenge

1. The challenge will ask students to utilize the world's smallest AI Supercomputer for Embedded and Edge Systems located directly on board the International Space Station (ISS), together with a number of different built-in sensors, allowing for collection, analysis and processing of various data gathered directly in a space environment by using self-created algorithms.
2. The challenge is built around existing setup, without the utilization of additional hardware. Teams are asked to utilize the AI capability on board the ISS and built-in sensors, in order to get insights from acquired data using self-created algorithms.
3. The challenge consists of two stages: In the first stage, ten Pitch Competition Finalists will be selected from all submitted proposals, based on a decision of a Jury. Pre-Selection Jury will be composed of members from the group of Partner entities, having the necessary qualifications to select finalists.
4. Ten teams will be selected as finalists by the Jury will be given the opportunity to present their proposal during a dedicated Final Pitching Event and compete for the Grand Prize. Results of public voting will be part of the decision-making procedure and are valued at 20% of the final score. The rest 80% of the score will be based on the decision of the Jury, using assessment methods as elaborated on in this rulebook.
5. Detailed information regarding the AI Box and built-in sensors can be found on the official webpage of the Challenge.

II Duration of the Challenge and Challenge stages

1. The Challenge shall take place from **October 2021 to April 2022**.
2. The Challenge will be officially announced in the **beginning of October**.
3. Registration of teams will be opened on **15 October 2021**. All submissions should be made by using a dedicated application form found at aichallenge.space (unless otherwise specified).
4. Teams' participation will be officially confirmed by a confirmation of participation email from Organizers.
5. The registration will be closed on 21 January 2022 at 23:59 GMT+7.

6. Due date to submit all project proposals is **15 February 2022 at 23:59 GMT+7**. By this date, all projects must have been delivered and may no longer be modified. No exceptions will be made.
7. Entries will consist of a Paper Submission, in which Teams present their findings, ideas and solutions in a written report for review by a panel of educators, scientists, engineers, and/or technology experts selected by the Organizers.
8. First webinar by **ICE CUBES** on introduction to **AI BOX** will be held virtually on **in the beginning of November**. This will be a recorded online session focused on introducing the necessary information to all participating Teams related to the characteristics and work with ICE Cubes AI Box. More information will be sent closer to the event by email provided by teams during the registration.
9. The series of workshops by **Space Zab and other organizations** on space technology and Artificial Intelligence will be held virtually between **November 2021 and December 2021**. This will be a recorded online session introducing students to the Artificial Intelligence and space mission within the space industry, providing invaluable support for maximization of success of translation of the project into concrete applications. More information will be sent closer to the event by email provided by teams during the registration.
10. Ten Pitch Competition Finalists will be announced in the **mid-March 2022**. The ten (10) student teams with the highest overall scores from judging will be deemed finalists and will compete for the Grand Prize and the Runner-up prize. The Organizers will, via an email sent to the address entered at the time of registration, inform all participating teams on the results of the pre-selection.
11. Live/Virtual Pitching will be held around mid-April. All team members of each team that is participating in the Final Pitching must register for the conference by **April 1, 2022**.
12. Public voting will be opened during the Final Pitching Event.
13. The Organizers reserve the right to make any amendments to the timeline and alter the duration of the Challenge. In such a situation, full and timely information will be conveyed to Participants.

III Eligibility

1. Teams of 2–5 undergraduate students from all accredited universities, polytechnics and technical institutes within all ASEAN countries and Taiwan are eligible to participate in the Challenge.
2. All team members shall be students at the same university/polytechnic/technical institute, however, if the participating team consists of more than 3 students, maximum one member of the team can be a student at any other accredited university/polytechnic/technical institute within ASEAN countries or Taiwan.
3. Members of the student teams are not required to be enrolled in the same academic program. The format of the challenge is such that it complements the skills of students enrolled in STEM degrees, but is not limited only to STEM majors. In fact, student teams could be a mix of students of various academic programs, as complementary skills will allow students to learn more and maximize the chance of succeeding in this competition.
4. All teams must have a designated faculty advisor. Faculty advisor must be an employee of the same university where the majority of participating students are enrolled. Each advisor shall only supervise one team. Advisor will be responsible for supporting students in their work, for providing professional guidance and be responsible for obtaining any necessary approvals from the university's authorities and administrators. Under no circumstances will the Organizers be liable for Faculty's failure to consult its school's authorities and administrators or for failing to obtain the necessary permission(s).
5. Employees of the Organizers or its affiliates, advertising or promotion agencies, those involved in the production, development, implementation or handling of this Challenge, any agents acting for, or on behalf of the above entities, their respective parent companies, officers, directors, subsidiaries, affiliates, service providers, prize suppliers, any other person or entity associated with Challenge and/or members of their immediate families (spouses, children, siblings, parents) and/or persons living in the same household as such persons, whether or not related, are ineligible to enter the Challenge.
6. The official language of the Challenge is English. All competition business including registration, correspondence, and project submission, must be completed in English.
7. At least one student in each Team must speak English fluently, and that member must be present at the final event in order to conduct their Team's presentation, if they are selected as a Finalist.

IV Registration and Submissions

1. Teams will register for the Challenge by providing names, contact information, and the location of all team members, including faculty advisor, using a dedicated application form that can be found at an official webpage of the Challenge: aichallenge.space. In addition, each Team profile must include the information about an official team name and name of the university/polytechnic/technical institute the team is representing.
2. Each student within a team applying for the challenge must also prove his enrollment status by providing at least one of the following: a) unofficial transcript; b) letter from student's university/polytechnic/technical institute registrar; c) copy of the student ID with an expiration date. These documents shall be attached to the application form.
3. Each team must provide the team registration letter that the team will comply of rules and conditions using the form on official webpage. This document shall be attached to the application form.
4. The team will receive the confirmation of registration via email within 5 business days after registration.
5. The Organizers reserve the right in their sole discretion to disqualify any entry at any time which, in the Organizers' reasonable opinion, endangers the safety or well-being of any person, or in the event it is determined that the student and/or his/her parent/legal guardian have not complied with these Official Rules. In addition to the Organizers' right to do so at their discretion, the judges will also be instructed to disqualify any entry that describes dangerous conduct, stunts or tricks, conduct that could lead to physical injury, property damage or otherwise violates or is inconsistent with these Official Rules.
6. Each team must submit the project proposal by the official deadline indicated in the official Challenge timeline. The submission portal will be sent to registered team by e-mail.
7. Deliverables must be submitted in PDF format in the maximum length of 20 pages including annexes and any attachments. Submissions that fail to work or are not understandable for any reason will result in the disqualification of the entry.
8. The deliverable must consist of an outline of the project plan, and this outline must also include details regarding methodologies, implementation approach, schedule,

software designs, and feasibility and risk assessment. The template of deliverable can be found on the official webpage.

9. All deliverables must absolutely respond to the Challenge issue and rules described.

10. Submissions that are deemed by the Organizers or judges in their sole discretion to be illegal, immoral, obscene, profane or not in keeping with Organizers' values or reputation will be disqualified.

11. By entering the Challenge, the student warrant that the team's proposal does not contain confidential material, and that neither the student nor the parent or legal guardian is aware of any conflicting rights in the submission or claims to the submission, including but not limited to copyright, trade secret or other intellectual property right.

12. All forms of scientific fraud and misconduct are prohibited in all aspects of the Challenge, including but not limited to plagiarism, data fabrication, and/or use/presentation of other researchers' work as one's own. If a team uses copyrighted material, images, or videos from a third party in their proposal or/ and presentation, they must provide permission and authorization from the owners to use this material in advance.

V Selection of Pitch Finalists

1. The Jury consisting of a panel of qualified judges selected by the Organizers, Promotional Partners and their partner organizations will review all submissions from teams participating in all Categories of the Challenge after the submission deadline.

2. Based on the **judging and scoring criteria** determined by the Organizers and members of the Jury, the Jury will select ten (10) best proposals from all submitted proposals. Teams whose proposals were selected by the Jury will be deemed Pitch Finalists.

3. Only one team per university/polytechnic/technical institutions may be selected as a Pitch Finalist.

4. Finalists will be invited to participate in the webinar prior to the Final Pitching Event. The information regarding the Final Pitching Event and evaluation criteria will be provided in the webinar. Finalists shall submit a short video for public voting.

5. The decisions of the Judges, with the approval of the Organizers, will be final. Judging scores will not be released to Teams. Under no circumstances are taken into account factors relating to the person's appearance, religious or trade union, political opinions or sexual orientation of the participants. The selections will not result in any way, whether directly or indirectly, by chance or luck.

VI Public Voting

1. The Public Voting period will be opened when the Final Pitching Event starts. The voting system will be closed 15 minutes after the pitching session.

2. In the Public Voting Period, members of the public worldwide (the "Voters") are invited to visit the official website of the Challenge to vote on the 10 (ten) announced finalists' projects posted in a form of a short video explaining the purpose of the projects at an official webpage. There is no official guidance regarding the content of the video, but the video must be focused on the teams' proposal. Voters will be asked to select the best finalist project in accordance with the voting instructions posted at the official website.

3. Only votes submitted via the official website and in accordance with these Official Rules during the Public Voting Period will be considered.

4. All determinations regarding the eligibility of votes will be made by the Organizers in their sole discretion, and such determinations may be made at any time.

5. Votes generated by script, macro or other automated means or any other means intended to impact the integrity of the voting process as determined by the Organizers may be void.

6. Votes obtained by any fraudulent or inappropriate means, including, without limitation, offering prizes or other inducements to members of the public, payment for votes or offering to trade votes may result in those votes being void and the associated finalist being disqualified.

VII Final Pitching Event

1. This final stage of the Challenge consists of an oral presentation of the Projects by the 10 Teams selected for the Final Pitching. These teams will have the opportunity to present their projects and demonstrate their scientific knowledge.

2. At least one Team Member, accompanied by the Team Leader, is required to present at the Pitching Event, however, all Team Members are encouraged to attend and participate. All presentations must be conducted in English.
3. Finalists will be judged by a panel of qualified judges selected by the Organizers, Promotional Partners, and their partner organizations, **according to judging and scoring criteria that will be provided to the finalists prior to the Final Event.**
4. Presentation materials including portable computing systems, presentation software, storyboards and other visual aids are the responsibility of the team participating on the Final Pitching. Any materials used must conform to competition specified standards.
5. The finalist who scores the highest according to these judging criteria will be deemed the Grand Prize Winner. The decisions of the Judges are final and binding in all matters.
6. The finalist who scores the second according to these judging criteria will be deemed the Runner-up Prize Winner. The decisions of the Judges are final and binding in all matters.

VIII Judging process and assessment factors

1. Winners of the Grand Prize and Runner-up prize will be announced during a live (or virtual) conference. The Competition may choose to live-stream this event for the general public on the internet.
2. The judges will consider and give scores under the following categories:
 - Explanation of how the Team came up with their original idea. Clear explanations and a demonstration of how well the problem and solution are understood by the team;
 - Demonstrated scientific knowledge, providing details about the science behind the new innovation or solution;
 - Demonstrated feasibility;
 - Creativity, ingenuity and innovative thinking (remember the idea must be a new innovation or solution, and cannot simply be a behavioral change or a new use for an existing product). Teams must provide an explanation of how their project could have broader reach or impact;
 - Clarity of the proposal;
 - Persuasiveness and effective communication

- Results of the public voting, valued at 20% of the overall score

3. The decisions of the Judges, with the approval of the Organizers, will be final. Judging scores will not be released to Teams. Under no circumstances are taken into account factors relating to the person's appearance, religious or trade union, political opinions or sexual orientation of the participants. The selections will not result in any way, whether directly or indirectly, by chance or luck.

IX Prizes

1. There will be two (2) formal prizes awarded in total. All three prizes will be announced during the Final Pitching Event.

2. Grand Prize will be awarded to one (1) team of absolute winners based on the decision of a Jury and public voting during pitching.

3. Grand prize winner will get the opportunity to launch their project to the International Space Station and accommodate it on the AI Box. They will be provided with full support related to the execution of the project on board the International Space Station including support for arising safety and other procedures.

4. The winners will have the opportunity to execute their project on the International Space Station and utilize the AI Box for their project for the duration of maximum three months.

5. Second prize will be awarded to the runner-up team finishing second according to competition results (taking into account both the decision of the Jury and the Public voting). They will be awarded with consultations and a mentoring package provided by the Organizers, aimed at supporting further development of the idea.

6. Every Participant recognizes and accepts that the Awards cannot give rise to no contesting of any kind, to a request of delivery neither of their monetary exchange value, nor to their replacement or exchange for another Awards, except for the decision of the Organizers due to prize unavailability, safety or security considerations, or any other reason as solely determined by the Organizers in which case a prize of comparable or greater value will be awarded. The prizes are not transferable and the Participants are informed that the sale or the exchange of the Awards is forbidden.

X Intellectual Property

1. Every Deliverable shall be considered as a collaborative work of all members of one team, and shall remain the Participants' property. For avoidance of doubt, participation in the Challenge shall not prevent any Participant from proceeding to any patent registration, which will be under the Participant's full responsibility and charge.

XI Adherence to the rules, Liability, and other provisions

1. This challenge is subject to, and all Eligible Participants shall comply with, all applicable federal, state and local laws and regulations.

2. Except where prohibited, Participants agree that any and all disputes, claims, and causes of action arising out of or connected with this Challenge, or any prizes awarded, or the determination of winners, shall be resolved individually, without resort to any form of class action, and exclusively by the appropriate court.

3. No responsibility or liability is assumed by the Organizers for technical problems or technical malfunction arising in connection with any of the following occurrences which may affect the operation of the Challenge: hardware or software errors; faulty computer, telephone, television, cable, satellite, network, electronic, wireless or Internet connectivity or other online communication problems; errors or limitations of any Internet service providers, servers, hosts or providers; garbled, jumbled, or faulty data transmissions; failure of any email transmissions to be sent to or received; lost, late, delayed, or intercepted email transmissions; inaccessibility of the Website in whole or in part for any reason; traffic congestions on the Internet or the Website; unauthorized human or non-human intervention of the operation of the Challenge, including without limitation, unauthorized tampering, hacking, theft, virus, bugs, worms; or destruction of any aspect of the Challenge, or loss, miscount, misdirection, inaccessibility, or unavailability of an account used in connection with the Challenge.

4. Participation in the Challenge and/or acceptance of a Prize constitutes permission for the Organizers to use, without notice or further compensation, worldwide and in perpetuity, any Eligible Participant's Entry, photo, likeness, biographical information, statement, and voice in any and all media for any purpose, including without limitation, advertising and promotional purposes as well as in, on or in connection with the Website or the Challenge or other promotions, and Eligible Participant hereby releases the Organizers from any liability with respect thereto.

5. The Organizers reserve the right to cancel, shorten, suspend the Challenge without prior notice: (a) In cases of force majeure; (b) If it appears that fraud has occurred in any form whatsoever. The Organizers cannot be held responsible for cancellation or for suspension of the Challenge according to the present Article and no allowance nor compensation will be due to the Participants.

6. In the event of any discrepancy between the English language version of these Official Rules and any other translated versions, abbreviated versions, or Challenge-related advertising or disclosures, the English language version of these Official Rules shall prevail.

7. The Organizers are not responsible for any typographical errors in the announcement of any Prize or these Official Rules.

8. Participation in the Challenge constitutes the student's full and unconditional agreement to and acceptance of these Official Rules and the decisions of the Organizers and judges, including but not limited to Organizers' interpretations of these Official Rules.

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AI Space Challenge Organizing Committee