Technical Guideline of the "Ice Vision" Contest for Purposes of the National Technology Initiative.

1. General Information

1.1. This Technical Guideline determines the procedure requirements for holding the "Ice Vision" Contest for purposes of the National Technology Initiative (hereinafter referred to as "Contest"), maintenance and other technical parameters of the Contest.

1.2. Technical Guideline is published on the official Contest Website http://icevision.upgreat.one/

1.3. Additional terms and definitions used in the Technical Guideline:

1.3.1. **Training dataset (Training sample)** is a collection of data in the form of frames (images) with markup information, or more specifically information about the existence and location of chosen categories of traffic signs in the sequence of frames from the training dataset.

1.3.2. **Test dataset (Test sample)** is a collection of data in the form of frames (images), where markup information is not available to the Participating teams. The Test dataset problem solution of Participating teams can be uploaded to the Test system with the output of publically available results immediately after the solution is processed.

1.3.3. **Qualification dataset (Qualification sample)** is a collection of data in the form of frames (images), where markup information is not available to the Participating teams. The result of solving the Qualification dataset by the Participating teams is uploaded to the Test system. The result of processing the Qualification dataset solutions is posted by the Organizers in accordance with the Contest schedule and is used to determine winners and first and second runner-ups.

1.3.4. **Test system** is an automatic checking system, which accepts files in a strictly fixed format that contain the participant's Test or Qualification dataset solution, processes the solution, comparing it with the benchmark, and outputs the result that is posted in the ranking table with the results of the Participating Teams. Located at the address: visiontest.misis.ru

1.3.5. **Program-Solution** is a computer program developed by the Participating team that automatically processes a dataset and outputs the solution to the problem at hand in the form of a file in a strictly fixed format, described in this Technical Guideline. The file must be suitable for uploading to a Test system for further processing and obtaining the result in the form of points.

1.4. Opening and closing the reception of files containing solutions using the link, as well as all calculations regarding the date and time in the course of the Contest are carried out in accordance with Moscow Standard Time (MSK).

3. Procedure for Holding the Attendance-Based Round.

3.1. General Information on the Attendance-Based Round.

3.1.1. The Attendance-based round is held in accordance with the schedule, which is sent to the Participating teams by e-mail, specified during registration for the Attendance-based round.

3.1.2. The Participating teams are required to develop and write a Program-Solution that solves the task presented during the Attendance-based round. In order to write the Program-Solution, the teams can use any software products and tools, however, the written Program-Solution must deliver the result in the form of a file in a strictly fixed format, which is announced to the Participating teams during the Attendance-based round. Participants upload this file to the Test system.

3.1.3. During the Attendance-based round, the participating teams are not allowed to use external computing powers, including through remote access, unless the Organizers provide them.

3.1.4. The Attendance-based round has 2 stages: a training stage and a finale.

3.2. Problem Conditions and Evaluation of Attendance-Based Round

3.2.1. As part of the Attendance-based round, the participants must create software for detecting traffic signs on the video, presented as a sequence of frames, in compliance with the current Traffic Rules of the Russian Federation (TR of RF).

3.2.2. Dataset sequences are provided as a sequence of frames packed into tar archives. Frames come in two versions: lossless compressed FLIF format and lossy compressed JPEG format.

3.2.3. The Organizers provide markup format description for the training sample and the file-solutions during the Attendance-based round.

3.2.4. An extended edition of the Test System, whose operation algorithm will become available to the Participating teams during the Attendance-based round, will carry out evaluation of participants' solutions.

3.2.5. Organizers have a right to impose restrictions on the computing powers used by the Participating teams to execute the Program-Solution as part of the Finale.

3.3. Procedure for Conducting the Training Stage of the Attendance-Based Round.

3.3.1. At the beginning of the training stage of the Attendance-based round, the Participating teams are provided with Training and Test datasets. Markup data is also included in the Training dataset, that is, information about the existence and location of traffic signs in the sequence of frames from the Training dataset.

3.3.2. During the training stage of the Attendance-based round, the participants develop a program for solving a problem and evaluate the quality of their solutions, transferring to the Test dataset the result of their work on the Program-Solution.

3.3.3. After the processing of the file with the solution uploaded by the Participating team to the Test system, the participant receives points depending on the quality of the solution.

3.3.4. Points awarded during the training stage are disregarded when determining a winner.

3.3.5. For the duration of the training stage a summary table with points of all the teams participating in the Attendance-based round becomes available in the Test system.

3.3.6. If a Participating team has sent a file with a solution more than once, the table shows the result of processing **the most recently uploaded file**, regardless of what result was shown by any of the solutions sent by the Participating team earlier.

3.3.7. If during the training stage the Test dataset was updated, then the Participating teams should send solutions for the updated dataset to the Test System. It should be noted that the results of the Participating teams that have not yet sent solutions for the updated dataset are also displayed in the table after the reassessment based on the updated dataset.

3.4. Procedure for Conducting the Final Stage of the Attendance-Based Round.

3.4.1. The Participating teams receive an archive with the Qualification dataset, which can be password protected, and transfer this archive to their equipment.

3.4.2. At the appointed time, the teams receive the password for accessing the archive, activate it and, under the supervision of the Jury members and representatives of the Organizing Committee, launch their Program-Solution to process the Qualification dataset.

3.4.3. During the processing of the Qualification dataset by the Program-Solution, representatives of the Participating teams have the right to carry out manipulations with their equipment only upon receiving special permission and under the supervision of at least 2 members of the Jury and representatives of the Organizing Committee.

3.4.4. The Qualification Dataset processing time by the Program-Solution of the Participating teams is determined on the starting date of the Attendance-based round.

3.4.5. The Participating team must upload the ready-made solution to the Test System in the form of a file in a strictly fixed format and in the manner specified by the Organizers.

3.4.6. The uploading deadline and the time allotted for uploading the file with Qualification Dataset solution for the Finale of the Attendance-based round is determined based on the Attendance-based round schedule.

3.4.7. The Program-Solution of the Participating team can not be run on any external resource, including the one belonging to the Participating team, unless when such resources are provided by the Contest Organizers.

3.4.8. By a special decision of the Organizers, the launch of the Program-Solution of all the Participating teams will be performed on the

computing powers provided by the Organizers, which is announced to the teams no later than 1 week before the start of the Attendance-based round.

3.4.9. The Participating team that used **manual markup or any of its elements during the Finale will be disqualified and excluded from participation in the Contest without the results being credited to them**. When there is doubt, the Participating team must, at the request of the Jury members and the Organizers, demonstrate the work of the program using a set of input values chosen by the Jury and on the equipment agreed upon with the Organizers.

3.5. **Determining the Winners of the Attendance-Based Round:**

3.5.1. The ranking table of the Participating teams is formed based on the awarded points.

3.5.2. The winners of the Attendance-based round are determined as follows:

3.5.2.1. The winner of the Attendance-based round is the Participating team that holds the 1st (first) place in the ranking table.

3.5.2.2. The first and the second runner-ups of the Attendance-based round become the Participating teams that have taken the 2nd (second) and the 3rd (third) places in the ranking table.

3.5.3. If, after the announcement of the results, the winner or the first and the second runner-ups of the Attendance-based round declines the prize or certain facts come to light, whereby the Participating team violated the Contest rules, the Organizing Committee has the right to pronounce the Participating team that is the next runner-up in the ranking table as the winner or the runner-up.

4. Additional Terms.

4.1. Participants teaming up to form Participating teams:

4.1.1. In accordance with cl. 6.2.5. of the Contest task, the participating teams take part in the Remote and Attendance-based rounds.

4.1.2. If a Contest entry was made by an individual participant, then before the start of the final Remote round, the participant must notify the Organizing Committee of the team's name and the team's entry list providing the names of additional participants.

4.1.3. The team that won the Remote round, in accordance with cl. 6.3.3. of the Contest task, must submit a list of team members to the Organizers in order to participate in the Attendance-based round of the Contest with the team's line-up consisting of a minimum of 2 (two) and a maximum of 5 (five) members.

4.1.4. An individual participant has the right to form a Participating team with another individual participant.

4.1.5. An individual participant can join the Participating team with the team's consent before the start of the final Remote round of the Contest.

4.1.6. Conditions for joining teams by individual participants are left to the discretion of the Participating team and the individual participant and are not regulated by the Organizers.

4.1.7. The Organizers can provide opportunities for socialization and communication between the Participating teams and individual participants for teaming them up within a platform using the Test system.

4.2. All participants must submit additional documents and information necessary to hold the Contest and ensure safety upon request of Contest Organizers and authorized security officers.

4.3. If there is advertising design put in place by the participants and teams in some form or other, the participants must secure the approval of the Organizing Committee representatives beforehand prior to the beginning of the Contest via email. The content and placement of advertisements of team sponsors must also be agreed upon with the Organizers before the beginning of the Contest.

4.4. All software and equipment of the participants, if any, should not inflict any harm on the people around them, and damage the Contest equipment.

4.5. During the Attendance-based round of the Contest, participants must have information badges or identity tags provided by the Organizers, which are to be worn on the chest.

4.6. By participating in the Contest, visitors and participants (or authorized persons), agree that photos and videos can be taken at Contest events without direct consent of visitors and participants (or authorized persons). Also, participants (or authorized persons), taking part in the Contest, agree that the results of the Contest rounds can be used to popularize the Contest and promote technology contests Up Great without having to obtain additional permission.

4.7. In case of non-observance of Additional Terms, the Organizing Committee reserves the right to refuse participation in Contest events.

6. Responsibilities of Contest Visitors and Participants.

6.1. Team members are required to attend the Contest events for their entire duration based on the schedule.

6.1.1. If participants refuse to attend events planned based on the schedule without consent of the Organizers, the Organizers have the right to suspend the Participating team or its individual members from subsequent participation in the Attendance-based round without counting their result.

6.1.2. Participants may refuse to participate in select events only if it is agreed upon with the Organizing Committee representatives.

6.2. Maintain cleanliness and order during the Contest.

6.3. Observe safety procedures on their own.

6.4. Event visitors must comply with generally accepted visitors' rules of conduct during public events.

6.5. Venue administration or the Organizing Committee reserves the right to deny access to an event to a visitor if he violates visitors' rules of conduct during public events.

6.6. If it is deemed necessary, show the tickets or documents allowing entrance to a public event to the venue administration representatives and security officers.

6.7. Undergo control procedures (inspection) by security officers when entering the venue where the Contest is being held.

6.8. Fully comply with the requirements of public order and generally accepted standards of behavior.

6.9. Take care of facilities and equipment.

6.10. Obey legal warnings and requirements of the venue administration, representatives of the Organizing Committee, the police, the Ministry of Emergency Situations and other individuals responsible for maintaining order and fire safety.

6.11. Behave respectfully towards the participants of public events, service staff, and officials responsible for maintaining public order and safety during public events.

6.12. Refrain from actions that could pose risks to others and lead to an emergency.

6.13. Carry out an orderly exit from the premises and facilities at the end of events.

6.14. Follow the instructions and abide by the decisions of the Organizing Committee of the Contest with regards to parking.

6.15. Should you receive evacuation information, proceed according to the instructions of the administration of the premises and law enforcement officers responsible for enforcement of the law, staying calm and not causing panic.

7. Contest Visitors and Participants are not Allowed to:

7.1. Create one's own Wi-Fi network of any kind, unless it is explicitly authorized by the Organizing Committee. Violators of this rule may be disqualified and removed from the Contest premises.

7.2. Carry firearms and bladed weapons, flammable, explosive, poisonous, odorous, narcotic substances, alcoholic beverages, as well as drinks in glass containers.

7.3. Smuggle, lead through or deliver in any other way any animal species, wild and domestic animals, insects, birds, etc.

7.4. Sit or stand on the stairs or in the access doors, invade presentation platforms during public events, and get in the way of participants moving around during public events.

7.5. Drink alcoholic beverages; show up at a public event under the influence of alcohol.

7.6. Smoke in all indoor areas of the Contest venue.

7.7. Yell or commit other actions that offend human dignity and public morality.

7.8. Throw away any objects that could be harmful in any way, as well as sit or stand in the aisles, on the stairs or in the access doors during the events.

7.9. Climb on fences, parapets, lighting facilities, TV filming locations, trees, pylons, roofs and supporting structures, appear on stage, in interior rooms and other personnel facilities and mechanical rooms without permission from the Organizing Committee.

7.10. Interfere with the regular passageway and evacuation in case of an emergency.

7.11. Damage equipment, technical aids, life-safety systems, design elements of a building, other equipment, and green spaces.

7.12. Sell, placard and post ads, banners and other informational products without written permission from the administration.

8. Security Protection.

8.1. During the Contest, security protection is provided by the security officers on behalf of the Contest Organizers.

8.2. All issues pertaining to personal safety and security of belongings, intellectual property and personal documentation are resolved by the Contest participants independently.

8.3. Participants must have personal identification documents (as required by the laws of the Russian Federation) and medical insurance (CHI or VHI) on hand at all times.

8.4. All participants must submit signed safety and personal data processing documents in the approved form during the Attendance-based round of the Contest.

8.5. Participants must follow the instructions of security officers.

8.6. Children under the age of 18 must be accompanied by adults or remain in the care of groups and teams accompanied by coaches, mentors or authorized persons and must have a package of documents on hand as dictated by the legislation of the Russian Federation.