2026

BRICS SKILLS COMPETITION

(BRICS+ FUTURE SKILLS & TECH CHALLENGE)

IT Application Innovation & AI Cross-Border Multilingual Cultural Application

BRICS-FS-67

Test Project

(International Final - Online)

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Content

1. Competition Format 2

2. Competition Content 2

3. Project Modules and Time Requirements 2

3.1 Basic Theoretical Knowledge of IT Application Innovation Industry and Artificial Intelligence 2

3.2 Data Screening 3

3.3 Data Annotation 6

3.4 Image Generation 12

4. Scoring Criteria for Project Modules 14

1. Competition Format

Team of 3 participants.

2. Competition Content

This competition consists of 4 modules, covering IT application innovation and AI theory, data annotation, model training and generation, cross-border multilingual deployment of AI tools, and aesthetic literacy.

3. Project Modules and Time Requirements

All participating teams are required to complete the competition modules within a total of 6 hours based on the given project modules.

3.1 Basic Theoretical Knowledge of IT Application Innovation Industry and Artificial Intelligence

3.1.1 Competition Content

Contestants are required to answer theoretical questions through an examination platform, including single-choice questions and true-or-false questions. This assesses their understanding and mastery of the basic theoretical knowledge required for Level 4 and Level 5 of the national standard for AI trainers. The content is compiled in accordance with the *National Occupational Standard for Artificial Intelligence Trainers (2021 Edition)*, covering office software operation, data processing, data annotation, statistical analysis, AI fundamentals, and various practical application-related theories.

3.1.2 Sample Questions

1. Which open-source text annotation platform supports named entity recognition and relation extraction? (Single-choice question)

A. doccano

B. LabelImg

C. CVAT

D. Praat

2. In AI data annotation work, what is the direct effect of complying with data security regulations? (Single-choice question)

A. Preventing data leakage and misuse

B. Reducing enterprise costs

C. Increasing annotation speed

D. Reducing equipment wear

3. Annotation standards should be established and uniformly trained before the project starts. (True or False)

A. True B. False

4. All annotation boxes must follow unified naming and color specifications. (True or False)

A. True B. False

Answers Summary:

1. A

2. B

3. A

4. A

3.2 Data Screening

3.2.1 Competition Content

Please upload 20 paper- cut images to the competition platform, meeting the following requirements:

(1) Standardization

It is recommended that the patterns be square in shape, with a minimum resolution of 1280×1280 pixels and at least 150 dpi. The images should include typical paper-cut motifs, such as water-drop patterns, sawtooth patterns, crescent patterns, willow-leaf patterns, etc. Only red and white colors are permitted. Both negative and positive carving methods are acceptable. For negative carving works, ensure that the lines are smooth, clear, and evenly thick, with neat cut edges and no roughness or breakage.

For positive carving works, ensure that the lines are firm, coherent, and completely retained, with no incompleteness or blurring.

(2) Creativity

The content of the paper-cut works must be positive and uplifting. When uploading, each work must be accompanied by a detailed description of its meaning, and the use of paper-cut motifs or local patterns should fully convey the intended symbolism.

The designs may go beyond traditional themes such as festivals and folklore, and can incorporate innovative expressions based on modern life, social hot topics, scientific and technological elements, etc. For example, a series of images may cohesively express positive messages such as a harmonious society, a beautiful China, or family happiness.

(3) Usability

The composition of each paper-cut work should be full and balanced, with a clear focal point. The elements in the picture should be reasonably arranged and mutually

complementary, without obvious gaps, imbalance, or overcrowding. The content and main subject of the paper-cut should be complete, without missing parts or blurring.

(4) Copyright

Ensure that the paper-cut images are original works or that you have obtained legal copyright from the original author. For original works, a signed statement of originality must be provided to certify authorship and copyright ownership.

If the work is reproduced or uses someone else's work, a clear copyright authorisation document signed by the original author must be held. Unauthorised works are strictly prohibited.

3.2.2 Submission Content

Submit 20 paper - cut images with clear ownership and copyright, suitable for annotation and meeting the competition requirements, along with descriptive texts for each image.

3.2.3 Example

Splendid Future – Work by Yi Peijuan

Description of the work: After rain, the sky clears and all things revive. Peonies, symbols of wealth and honour, bloom quietly. A phoenix flies into the peony bushes,

with a rainbow reflected on its head. The phoenix looks back with a smile, and its beautiful feathers symbolize a splendid future – representing people's happy lives, smooth careers, and bright prospects. This work won the Gold Award at the China Folk Crafts Exposition.

3.3 Data Annotation

3.3.1 Task Type 1: Pattern Annotation

3.3.1.1 Competition Content

Please annotate a given number of patterns provided by the competition platform, as well as the paper-cut images uploaded by your team. For annotation languages, you may freely choose any two of the following: Chinese, English, or Russian.

During the annotation process, each paper-cut image must be annotated accurately and comprehensively, strictly following the detailed requirements below:

(1) Pattern Description – Carefully observe the paper-cut work, analyse it in depth, and clearly specify the specific patterns used. Examples include sawtooth patterns, crescent patterns, water-drop patterns, etc.

(2) Object Enumeration – Comprehensively and accurately identify all objects in the image, including both the main subject and background elements, without omission. If the paper-cut features a human figure, specify the gender, age, and clothing characteristics; if it contains animals, describe the species and posture; if there are plants, state the name and growth state. For complex scenes, enumerate objects in a logical order to avoid repetition or omission.

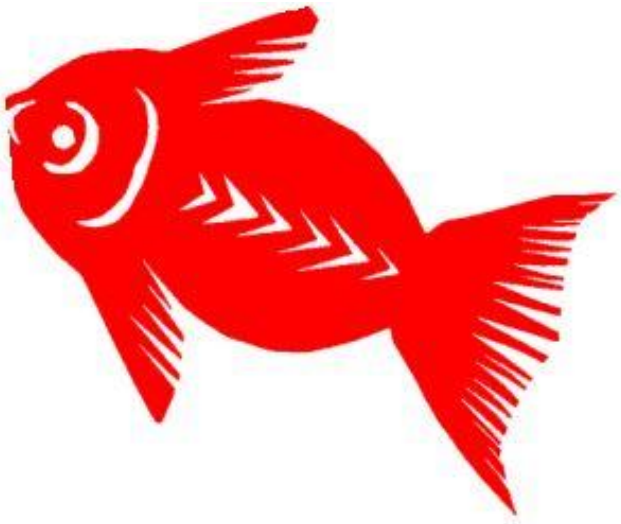
(3) Descriptive Sentence – Use one complete, logically clear sentence to accurately present the relative positional relationships among the objects in the image, fully capturing the details and compositional features of the paper-cut.

3.3.1.2 Submission Content

(1) Annotation information for the 20 self-selected images;

(2) Annotation information for the images randomly assigned by the competition platform.

3.3.1.3 Example



This is a red-on-white Chinese paper-cut work. The artwork mainly uses sawtooth patterns, circular patterns, and crescent patterns. The image presents a minimalistic digital drawing of a bright red fish in a stylised abstract design: the fish body is broad and rounded, with three white arrow-shaped stripes on the side, and simple circular eyes; the tail and fins feature saw-toothed edges, giving it a striking and powerful flat visual effect. The white background highlights the vivid red subject.

3.3.2 Task Type 2: 3D Point Cloud Annotation

3.3.2.1 Competition Content

Please enter the 3D annotation task on the competition platform.

Platform Interface Layout:

Centre area: Overall 3D point cloud preview (supports rotation, zoom, and pan).

Left area: Corresponding 2D images (multiple camera views can be switched).

Bottom area: Three views (left view, front view, top view) to assist precise positioning.

Complete the 3D obstacle annotation according to the following requirements:

(1) Annotation Scope

In the point cloud data loaded on the platform, all objects that have significantly more points than the surrounding noise (generally ≥5 valid points) and can be discerned as independent obstacle contours must be annotated.

Categories include: pedestrians, cyclists/moped riders, bicycles, motorcycles, tricycles (with/without occlusion), minibuses, vans, large/medium buses, trucks, intelligent logistics vehicles, special-shaped vehicles, animals, various static obstacles (cones, water barriers, crash barrels, warning signs, bollards, etc.), ghosting, vehicle attachments, other vehicles, accident vehicles, etc. (25 categories in total, refer to the requirement specification).

(2) 3D Bounding Box Drawing Requirements (Qualitative)

Fit: The 3D box must tightly enclose the main point cloud body of the obstacle, with no obvious gaps between the box edges and the point cloud boundaries, nor excessive empty space (visual fit is acceptable).

Bottom Alignment: The bottom of the box should be aligned with the ground or road surface on which the obstacle stands, with no obvious floating above or sinking into the ground.

Sparse Point Cloud Handling: If the point cloud is very sparse (e.g., only a few scattered points), refer to the size of the obstacle in the left 2D image and supplement reasonable dimensions based on common sense to ensure the box appears proportionally appropriate.

Consistency Across Consecutive Frames: The same obstacle must maintain a consistent ID across consecutive frames, and the box size and orientation should transition smoothly without abrupt changes.

(3) Orientation Annotation

For pedestrians, vehicles, and riders, annotate the heading direction (by rotating the 3D box's yaw angle) based on the point cloud distribution and the movement direction shown in the 2D images.

The orientation should generally match the actual travel or standing direction (judged visually, with no obvious errors).

(4) Camera Appearance Judgement

For each annotated 3D obstacle, determine in which camera views the obstacle appears (choose from 7 cameras) based on the left 2D images.

If the obstacle is clearly visible in a camera's 2D image (allowing recognition of its category and approximate outline), select that camera ID.

(5) Attribute Annotation

For each 3D obstacle, also annotate the following attributes (using the platform's drop-down menus or checkboxes):

Occlusion attribute: Yes/No (whether the obstacle is significantly occluded in part of its point cloud or outline by other obstacles).

Group attribute: Yes/No (whether ≥2 obstacles of the same category are closely adjacent and enclosed as a whole).

(6) Quality Requirements (Qualitative)

Completeness: All discernible obstacles are annotated, with no obvious omissions.

Accuracy: Category selection is correct, 3D boxes fit well, and orientation is

reasonable.

Camera judgement accuracy: For spot-checked obstacles, the selected cameras should match the actual visibility in the corresponding 2D images.

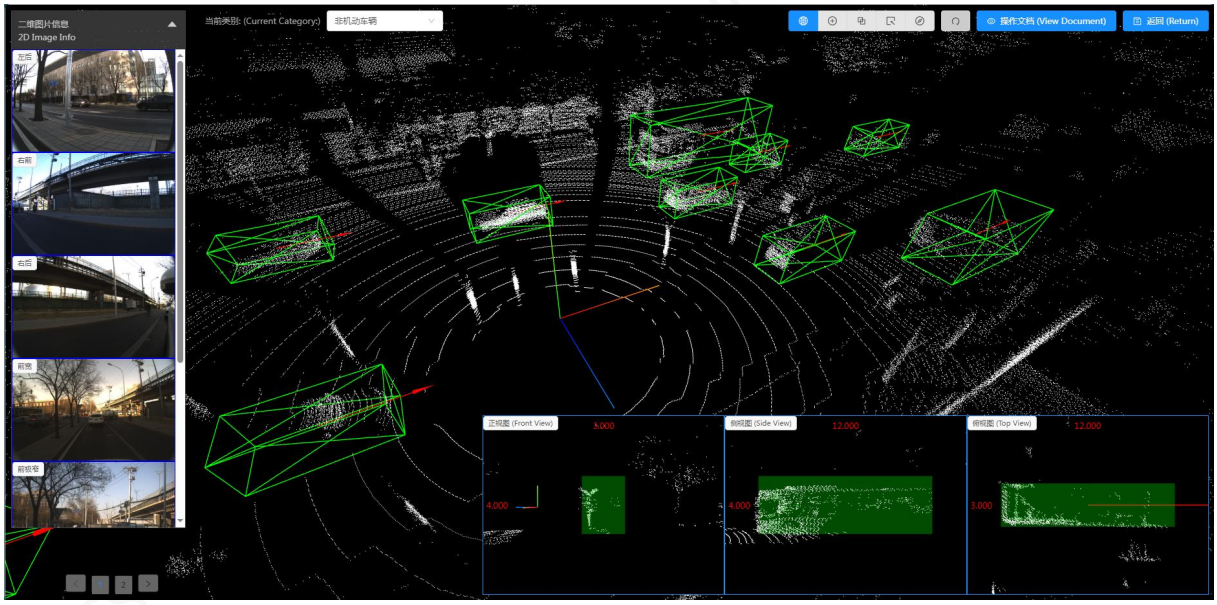
3.3.2.2 Submission Content

The task status on the platform must show as "Completed".

All point cloud frames must have complete 3D boxes.

The judges will randomly select 3 frames to check the fit of 3D boxes, category correctness, and camera selection accuracy; the overall score must be ≥90.

3.3.2.3 Example



3.3.3 Task Type 3: 2D Image Annotation

3.3.3.1 Competition Content

Please enter the 2D annotation examination on the competition platform. Complete the 2D obstacle annotation according to the following requirements:

(1) Annotation Targets

Only annotate three categories: vehicles (sedans, SUVs, trucks, buses, etc.),

vulnerable road users (pedestrians, cyclists/moped riders), static obstacles (cones, water barriers, crash barrels, triangular warning signs, etc.).

Objects that are too blurry to determine their attributes should not be annotated.

For distant but clearly outlined targets: large vehicles shall be labelled as medium trucks, small four-wheeled vehicles as sedans, and riders as motorcycles with a person.

(2) 2D Bounding Box Requirements

The box must tightly enclose the actual visible outline of the obstacle.

Do not include rear-view mirrors, open doors, taxi roof lights, antennas, or other appendages.

Occlusion handling:

No occlusion (0%), slight occlusion (≤50%), severe occlusion (50%–80%), and heavy occlusion (80%–100%).

If the occluded area exceeds 2/3 (approximately 67%), do not annotate that target (special rules may apply based on the visible proportion of wheels).

The same obstacle must maintain a consistent ID across consecutive frames (the platform may automatically track or allow manual assignment).

(3) Quality Requirements

Every image should have all eligible targets annotated, with no omissions or misclassifications.

The box fit error shall not exceed 5 pixels.

After all annotations are completed, save and submit.

3.3.3.2 Submission Content

The task status on the platform must show as "Completed".

The annotation results must pass the platform's self-check (no omissions, correct occlusion judgements, and continuous IDs).

The judges will randomly check 3 tasks, and the accuracy rate must be ≥95%.

3.3.3.3 Example

3.4 Image Generation

3.4.1 Competition Content

Please use textual prompts to create a paper-cut work featuring a little rabbit as the main subject. Use prompts in two of the three languages (Chinese/English/Russian – choose any two) and generate corresponding paper-cut works respectively.

Requirements:

Employ rich and representative paper-cut patterns, such as sawtooth patterns, crescent patterns, etc., and combine them skillfully to produce distinctive texture effects.

Incorporate at least one plant element – whether flowers, branches, leaves, or vines – that harmoniously matches the little rabbit in a natural and coordinated composition.

The entire paper-cut should possess both creativity and aesthetic significance. This

can be achieved through novel composition, unique styling, or by endowing the work with deeper symbolic meaning, so that it is visually artistic and conceptually fresh.

3.4.2 Submission Content

Submit the prompts in two languages, the generated images, and a creative interpretation for each image on the competition platform.

3.4.3 Example

(1) Prompts

Present a cute little rabbit sitting beside two mushrooms. The rabbit's body is decorated with flower patterns, making it vivid and lively. The mushroom caps are covered with white dots, and the gills are finely detailed. The overall composition is simple yet full of childlike charm. Use sawtooth patterns to showcase the unique charm and delicate craftsmanship of paper-cut art.

(2) Interpretation

The Chinese character for rabbit (兔, tù) is homophonous with the character for journey/path (途, tú), symbolising a bright future. Its agile nature implies career advancement. The rabbit raising its head upward signifies a positive and striving attitude, along with good wishes. The umbrella-like shape of mushrooms symbolizes shelter and protection, providing a safe and reliable environment for healthy development. In the traditional tale of Chang'e flying to the moon, the jade rabbit represents longevity and good fortune. The rabbit is also one of the twelve zodiac animals. Moreover, the white rabbit signifies purity, happiness, and wisdom.

(3) Example Image

4. Scoring Criteria for Project Modules

The total score of the competition is 100 points. The overall score of each participating team is calculated as:

Module 1 (40%) + Module 2 (10%) + Module 3 (35%) + Module 4 (15%).

Scoring Item	Evaluation Principles	Score
Module 1: Basic Theoretical Knowledge of IT Application Innovation Industry and Artificial Intelligence	Basic theoretical knowledge related to data collection and processing, data annotation, etc.; single- choice questions and true- or- false questions.	40
Module 2: Data Screening	Standardization, usability, completeness, creativity, and copyright of the dataset.	10
Module 3: Data Annotation	Quantity of completed annotations and quality assessment of the labelled dataset.	35
Module 4: Image Generation	Clear theme conveying correct values.	15
	High match between prompts and generated images.	
	Proper use of prompts in Chinese/English/Russian	
	The competition platform must be used; otherwise, the entry will be disqualified (one-vote veto).	
Total		100