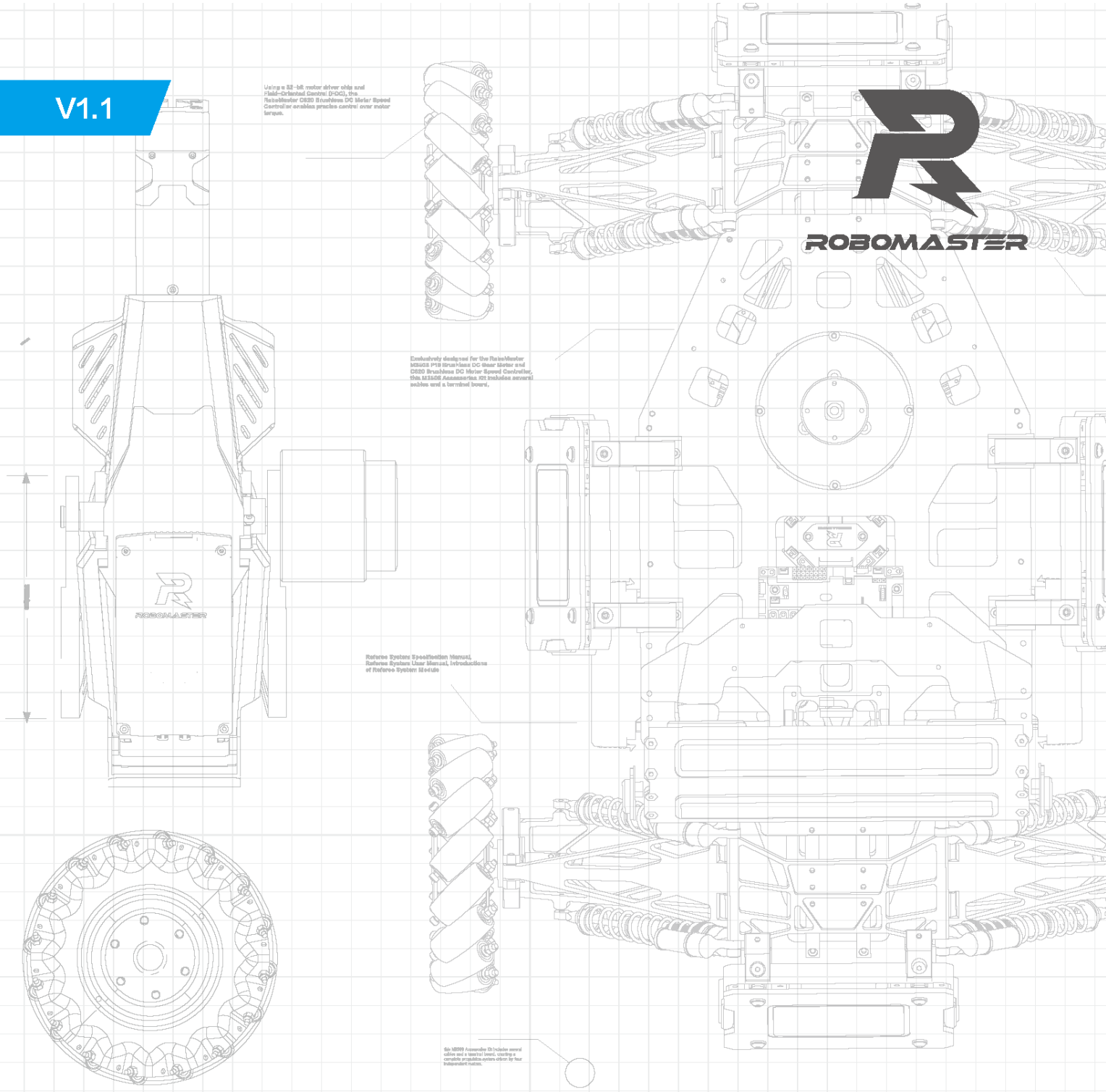
V1.1



ROBOMASTER 2021

UNIVERSITY AI CHALLENGE

PARTICIPANT MANUAL

Prepared by the RoboMaster Organizing Committee
Updated on December 2020

Using this Manual

Legend

Prohibitions	Important notes	Hints and tips	Definitions and references

Release Notes

Date	Version	Changes
2020.12.31	V1.1	1. Updated the “3.5 Participation Support” 2. Updated the “4.3 Livox LiDAR Academic Application Award”
2020.10.15	V1.0	First release

Table of Contents

Using this Manual 2
Legend 2
Release Notes 2
1. Introduction 5
2. Season Schedule 6
3. Participation 7
3.1 Participating Teams 7
3.2 Participants 7
3.3 Other Requirements 9
3.4 Platform for Communication and Q&A 11
3.5 Participation Support 11
4. Awards 13
4.1 Prize 13
4.2 Academic Incentive Award 13
4.3 Livox LiDAR Academic Application Award 14
4.4 Open Source Award 15
Appendix 1 Technical Assessment 17
Appendix 2 About Award Selection 22

Tables Directory

Table 2-1 Season Schedule....6
Table 3-1 Participant roles and responsibilities....7
Table 3-2 Team Members' roles and responsibilities....9
Table 3-3 Platform for Communication and Q&A....11
Table 3-4 Participation Support....11
Table 4-1 Awards Setup....13
Table 4-2 Academic Incentive Award Prizes....13
Table 4-3 Livox LiDAR Academic Application Award Prizes....14
Table 4-4 Open Source Awards....15
Appendix Table 1 Score range and corresponding award grades....17
Appendix Table 2 Assessment criteria for technical proposal....17
Appendix Table 3 Assessment Criteria for Technical Report....19

1. Introduction

The RoboMaster Competition is initiated by DJI, serving as an academic exchange platform specially designed for technology enthusiasts from all over the world. Since its establishment in 2013, the RoboMaster has been committed to their mission – “honor the youths, empower ideas, serve young engineers across borders, and make their dreams come true”. The RoboMaster is also dedicated to tapping the potential of young talents with engineering background while widely passing on the beauty of science & technology as well as innovation to the public.

Since 2017, the RoboMaster University AI Challenge (hereafter referred to as “RMUA”) has been co-hosted by the DJI RoboMaster Organizing Committee and the IEEE International Conference on Robotics and Automation in Singapore, Australia, and Canada. This competition has attracted a large number of top universities and scientific research institutions around the world to participate in the competition and academic seminars, furthering its international impact in the field of robotics. The event requires an extremely high level of comprehensive technical ability: teams need to independently develop full-automatic shooting robots using mechanical, electronic and algorithmic knowledge.

2. Season Schedule

⚠ The following season schedule is for reference only. The specific time is subject to the latest announcement by the RMOC.

Table 2-1 Season Schedule

Schedule	Item	Channel	Remarks
12:00 p.m., October 15, 2020 - 12:00 p.m., October 30, 2020	Registration on Official Website	Log in the RoboMaster website and complete the registration as required.	-
12:00 p.m., December 14, 2020 - 12:00 p.m., December 25, 2020	Technical Assessment - Technical Proposal	By registering and obtaining registration numbers, teams can use the their captains' accounts to log in to the competition registration system to submit for technical assessment.	● Optional ● Support for passing the Technical Proposal, refer to "3.5 Participation Support"
12:00 p.m., March 22, 2020 - 12:00 p.m., March 26, 2020	Technical Assessment - Technical Report		● Compulsory ● Only teams with passed technical reports are eligible to enter the AI Challenge.
April 1, 2020	Announcement of Entry List	RoboMaster's official website:	Support for overseas teams passing the Technical Proposal, refer to "3.5 Participation Support"
May - June, 2021, to be determined	Registration Day and Practice Matches	Xi'an, China	-
May - June, 2020, to be determined	Official Competition		Includes the group stage and the knockout stage.

The time of registration day, Practice Match and official competition is subject to the standard time of the venue. The time of other sections aligns with UTC+8 (Beijing time).

3. Participation

3.1 Participating Teams

Teams must adhere to the following rules:

1. If any two or more teams do not meet any one requirement under the “Five Differences” Rule, they shall be treated as the same team.

> The “Five Differences” Rule: Different team names, different team members, different supervisors, different affiliated institutions (college or other educational institutions), and different robots.

2. One team can sign up for more than one RoboMaster competitions (RoboMaster University Championship, RoboMaster University League, RoboMaster University Technical Challenge and RoboMaster University AI Challenge).

> Registrations have to meet the respective registration requirements of the different competitions.

The RMOC will deem a team participating in different competitions in the same season as the one and same group, in handling the various competition processes (including free material supply, material purchases, and participation support). A team cannot be broken up after completing registration for the season.

3.2 Participants

Please refer to the table below for the roles and responsibilities of the RMUA participants:

Table 3-1 Participant roles and responsibilities

Roles	Role Instructions	No. of Persons	Status	Responsibilities
Supervisor	● Provide guidance and support to the team on strategy, technology, management, etc. ● Must not be an official team member.	1-2	Faculties of the team’s college or university who are qualified for teaching and scientific research by August 2021.	● Responsible for the personal and property security of the team ● Coordinating on-campus resources, guide the team in developing project plans, controlling preparation progress, help the team

Roles	Role Instructions	No. of Persons	Status	Responsibilities
				successfully conclude the match ● During the matches, the Supervisor must actively cooperate with the work of the RMOC
Advisor	● Team Advisor ● Cannot simultaneously assume the roles of Supervisor and Regular Member	0-1	Full-time junior college students, undergraduates, postgraduates, and doctoral degree candidates in colleges and universities, as well as engineers, researchers and faculty members working in enterprises, research institutions, or as freelancers	● Provide guidance and support to the team on strategy, technology, management, etc. ● An advisor can undertake robot-building tasks and handle other competition-related matters.
Team Member	Including Captain, Team Member,and Project Manager, see the table below for details	4-12	Full-time junior college students, undergraduates, postgraduates, and doctoral degree candidates in colleges and universities, with proof of student identity up to August 2021.	See the table below for details

The total number of Supervisor and Advisor cannot exceed 2.

Table 3-1 Team Members' roles and responsibilities

Roles	Role Instructions	Responsibilities
Captain (no more than one person)	● Core team member, the team's technical and tactical leader ● The main liaison with the RMOC ● Must not be Project Manager or Advisor	● Responsible for the division of labor, overall planning and tactical arrangement and adjustment ● Attends the Captains Meeting, represents the team in confirming match results and participates in appeal processes and any subsequent hearings ● Responsible for the legacy and development of the team after the competition
Team Member	Other technicians in the team	● Algorithm group: Program development (recommended 2-8 persons) ● Mechanical group: Mechanical structure maintenance (recommended 1-2 persons) ● Embedded System group: Interface invoking and program development
Project Manager (0-1 person)	Oversees the RoboMaster project by managing project schedules, budgets, and personal safety.	In charge of controlling the overall progress of the project, comprehensively considering the overall management of R&D costs and work safety, and playing a decisive role in the overall project subjects (including progress, results and costs, etc.)

3.3 Other Requirements

R1. Any team participating in different competitions must use the same team name. A team's name must be in the format of "XXX Team", where "XXX" shall be the team's self-chosen name. The total length of the team name should not exceed 16 English letters or 8 Chinese characters. The team name must not include the university/college name or its abbreviation in Chinese/English, or such Chinese characters as "队", "团队" and "战队" which mean "team" in English, or other special symbols such as "*/-+". The team name must reflect the positive and pioneering spirit of the team and comply with relevant laws and regulations in China. If the RMOC determines that a team's

name does not align with the spirit of the competition, it has the right to require the team to change its name.

R2. A participating team must be attached to a university or college, and must meet the requirements for the roles, number and identity of participants stated in “3.2 Participants”.

R3. No more than two teams from the same school are allowed to participate in RMUA. Institutions having multiple campuses in different cities, making it difficult for certain students to compete as a team, are allowed to form more than one campus-based teams provided it has been verified by the RMOC. If a college/university has more than two teams applying, refer to the "Annoucement on the List of Representative Teams for RoboMaster University Series". The applicant must ensure that its registration information is complete and accurate, and that it will undertake the corresponding responsibilities. The applicant must bear all consequences caused by any missing or inaccurate information. For special circumstances, the applicant may contact the RMOC, which will handle the case based on actual circumstances. The RMOC reserves the right of final interpretation.

R4. Any two to five schools that do not have their own individual teams can form an intercollegiate team. Each component team in an intercollegiate team must first have taken into consideration their respective circumstances, communicated with each other thoroughly and created a plan for the team’s formation before proceeding to establish the intercollegiate team. An intercollegiate team cannot be split up after it has been established, and is only permitted to participate in rounds of the current competition in the name of the intercollegiate team. An intercollegiate team shall be deemed as having forfeited its participation if it is split up. An intercollegiate team is responsible for handling its own operating costs and personnel allocation and any disputes resulting therefrom, for which the RoboMaster Organizing Committee (RMOC) shall not be responsible. Intercollegiate teams should submit “RMUA 2021 Intercollegiate Team Statement” to the registration system. (a template is available on the registration system)

R5. In this season, one participant can only join one team for the competition.

- The RMOC will reject the registration of any team that does not meet any of R1-R4. The registration can be resubmitted after the team has amended it to meet the requirements.
- If any member of a team does not meet the identity requirements stated in R2, a Verbal Warning will be given to the team. If the Verbal Warning is ineffective, according to the seriousness of the situation, the highest penalty that can be given to the offending party is disqualification.
- If R5 is not met, the highest penalty that can be given to the offender and offending team

is disqualification.

3.4 Platform for Communication and Q&A

The RMOC provides many Q&A channels as shown below. For more contact details for the RMOC, see the list of official channels for the RoboMaster Organizing Committee.

Table 3-2 Platform for Communication and Q&A

Channel	Office Hours	Remarks
Forum: bbs.robomaster.com	Office hours: 10:30-12:30, 14:00-19:30 on weekdays	-
Email: robomaster@dji.com		-
Tel: 0755-36383255		-
WeChat: rmsaiwu		When sending a friend request, please indicate "competition + college name + designation + name"
QQ: 2355418059		

3.5 Participation Support

Teams are entitled to the following participation support:

Table 3-3 Participation Support

Criteria	Support
Passing the Technical Proposal	● Grade A: Receives an AI robot ● Grade B: Entitled to purchase an AI robot at a 20% off price ● Grade C and above: Entitled to rent at most two AI robots
● **Passing the Technical Proposal** ● **Adopted the Livox Mid-70 Sensor in the Technical Proposal and reasonably designed the sensing proposal**	After assessment by the RMOC, entitled to purchase at most two Livox Mid-70 LiDARs at 40% off price
Overseas teams participating in the RMUA	Receives a transportation subsidy of USD $ 1,000

Criteria	Support
Other Support	● Teams that have registered for the RMUA can enjoy discounts on certain products. For more details, please refer to the "RoboMaster 2021 Instructions for Purchasing Materials". ● Delivery fee and taxes waived for purchases of official materials ● Comprehensive support for areas including team operations, business management, publicity, project management and technical development

4. Awards

4.1 Prize

The awards are as follows:

Table 4-1 Awards Setup

Prize	Ranking	Quantity	Awards
Grand Prize	First place	1	● Certificates of achievement (for each member) ● Cash bonus USD $10,000 (pre-tax)
First Prize	Second place	1	● Certificates of achievement (for each member) ● Cash bonus USD $5,000 (pre-tax)
	Third place	1	● Certificates of achievement (for each member) ● Cash bonus USD $3,000 (pre-tax)
	Fourth place	1	● Certificates of achievement (for each member)
Second Prize	Fifth to Eighth Place	4	● Certificates of achievement (for each member)
Third Prize	The teams that entered the AI Challenge but failed to enter the quarterfinals	Multiple	Certificates of achievement (for each member)
Participation Award	Teams that did not participate in the RMUA, but were awarded Grade C or above in the Technical Report section	Multiple	Certificates of achievement (for each member)

4.2 Academic Incentive Award

Table 4-2 Academic Incentive Award Prizes

Prize	Awards	Quantity	Remarks
Academic Incentive Award Grade A	● Cash reward USD $10,000 (pre-tax)	No more than 1	

Prize	Awards	Quantity	Remarks
	● Certificates of achievement (for each member)		The judging criteria will be based on aspects such as academic, educational and practical value. RMOC will score the candidates and determine the winners, on which it reserves the final right of interpretation.
Academic Incentive Award Grade B	● Cash reward USD $2,500 (pre-tax) ● Certificates of achievement (for each member)	No more than 2	
Academic Incentive Award Grade C	● Cash reward USD $1,000 (pre-tax) ● Certificates of achievement (for each member)	No more than 5	

- Supervisors and advisors for the winning teams will also receive the corresponding honorary certificates.
- For more details about the selection criteria and grade of Academic Incentive Award, see Appendix 2 About Award Selection.

4.3 Livox LiDAR Academic Application Award

Table 4-3 Livox LiDAR Academic Application Award Prizes

Prize	Awards	Quantity	Remarks
Livox LiDAR Academic Application Award Grade A	● Cash reward USD $6,000 (pre-tax) ● Certificates of achievement (for each member)	No more than 1	The judging criteria will be based on aspects such as academic, educational and practical value. RMOC will score the candidates and determine the winners, on which it reserves the final right of interpretation.
Livox LiDAR Academic Application Award Grade B	● Cash reward USD $2,000 (pre-tax) ● Certificates of achievement (for each member)	No more than 2	

Prize	Awards	Quantity	Remarks
Livox LiDAR Academic Application Award Grade C	● Cash reward USD $1,000 (pre-tax) ● Certificates of achievement (for each member)	No more than 3	

- Supervisors and advisors for the winning teams will also receive the corresponding honorary certificates.
- For more details about the selection criteria and grade of Livox LiDAR Academic Application Award, see Appendix 2 About Award Selection.

4.4 Open Source Award

- There is no fixed number of open source awards, and the RMOC will rank them according to the quality of the submitted projects. For example, if there are no open-source projects of an outstanding nature, no winner will be announced for the Open Source Grand Prize. But if there is more than one outstanding open-source project, the Grand Prize may be awarded to multiple winners.
- The top three teams must make sure their programs are open-source in accordance with the rules and specifications. Otherwise, the cash awards may not be able to be issued on time. The RMOC will add more Open Source Awards depending on the actual open source situation.

Table 4-4 Open Source Awards

Prize	Quantity	Awards	Remarks
Open Source Grand Prize	Multiple	● Achievement certificates ● RMB 100000 (about USD $ 14492, pre-tax)	
Open Source First Prize	Multiple	● Achievement certificates ● RMB 50000 (about USD $ 7246, pre-tax)	
Open Source Second Prize	Multiple	● Achievement certificates ● RMB 30000 (about USD $ 4347, pre-tax)	
Open Source Third Prize	Multiple	● Achievement certificates ● RMB 10000 (about USD $ 1449, pre-tax)	

Prize	Quantity	Awards	Remarks
Open Source Outstanding Prize	Multiple	● Achievement certificates ● Grade A: RMB 5000 (about USD $ 724, pre-tax) ● Grade B: RMB 3000 (about USD $ 434, pre-tax) ● Grade C: RMB 2000 (about USD $ 289, pre-tax)	During the RM2021 season (Oct 15, 2020 to Aug 31, 2021), the core technologies or operation management approaches should be made open-source on bbs.robomaster and robomaster.com, for the purposes of promoting technical development at the RoboMaster University Championship and the innovative culture and spirit of engineers.

Appendix 1 Technical Assessment

Technical Assessment will be graded according to certain requirements and the grade will be displayed in the registration system. The following shows the relation between scores and grades:

Appendix Table 1 Score range and corresponding award grades

Score Range	Grade
90 ≤ X ≤ 100	A
75 ≤ X < 90	B
60 ≤ X < 75	C
0 ≤ X < 60	D

After reading the "RoboMaster 2020 University AI Challenge Rules Manual" and "RoboMaster 2020 University AI Challenge AI Robot User Manual", use the block diagram and text to describe the systemic structure of robotic hardware and software ready for the competition.

1. Technical Proposal

- Submission Format: PDF document, containing all pictures, text and video link addresses and passwords included (if any))
- Word Format: Font: Microsoft YaHei (Chinese) or Times New Roman (English), 12 pt
- File Size: No more than 10 pages of A4 paper
- File Name: University Name + Team Name + AI Challenge Technical Proposal
- Miscellaneous Video display is recommended. Teams can upload encrypted videos on YouTube or other online platforms, and indicate the video link addresses and corresponding passwords in their reports.
- Assessment Criteria: Teams are required to explain their robot system and technology implementation from the following aspects.

  Appendix Table 2 Assessment criteria for technical proposal

Area	Content
Hardware	● Sensor type and usage, combined with parameters to explain the reasons for such choice. ● Selection of computing equipment (including the onboard computer of the AI robot and the computer connected to the Outpost), combined with parameters to explain the reasons for such choice.

Area	Content
	● The communication hardware link analysis. Consider the choice of communication links and methods among controllers inside the AI robot, onboard computers and sensors as well as between the AI robot system and the Outpost, and explain the reasons for such choice.
Software	● Explain the functional modules and planned algorithms required to complete the competition. Analyze and consider them one by one in terms of perception system, obstacle avoidance, motion planning in buff/debuff zone, tracking control of the gimbal, global recognition of the Outpost. Point out the advantages and disadvantages of relevant algorithms. Explain the key problems that different modules may encounter and analyze the bottlenecks of their respective solutions. ● Describe the proposal for overall deployment of different functional modules. Explain the reasons for such choice, the key problems that may be encountered and analyze the bottlenecks of their respective solutions ● Describe the proposal for visual interaction and debugging interface, analyze the debugging process, problems and their respective solutions It is recommended that the participating teams share each team member's learning, research or competition experiences related to robot systems and the above algorithms. Relevant projects, papers or videos can be listed for reference.

2. Technical Report

Technical reports include the video display section and the written description section. The following are the specific requirements for the two sections.

A. Video Display

- Submission Format: Teams can upload encrypted videos on YouTube or other online platforms, and indicate the video link addresses and corresponding passwords in their reports.
- Video Standards:
  - Information boards or captions must be shown at the beginning of the video, to include the following details: school name, team name, date and location of shooting
  - It is recommended to record the video in a place with sufficient lighting so as to best display every operation and movement.
  - Please do not include any irrelevant scenes in the video. Non-essential parts in the video should apply faster playback speed. The video should be concise, clear and no longer than 10 minutes
  - It is recommended to take multiple clips of different tasks and edit these clips within reasons to

ensure the readability of the entire video. Misleading special effects or post-processing are strictly prohibited, as well as positioning the camera or using manual control to achieve automatic task execution.

- **Display content:** Teams need to film and describe the sensors they use, and the tasks shown must include but are not limited to:

Each section requires a title caption. Subtitles can be added for description if necessary.

  - Complete robot positioning, obstacle and Debuff Zone avoiding, and motion planning tasks in Buff Zone within the designated area.
  - Identify different Armors of moving robots and perform Armor targeting or chasing.
  - Global perception task for Outpost sensors and communication with AI robot.
  - Performing the entire competition process under the referee system server configurations, including the automatic startup during the competition, the supply of projectiles from the official projectile supplier, independent firing and confrontation with the enemy robots, as well as turning back to the Starting Zone, etc.
  - Visual interaction and debugging interface for system platform.

B. Description

- Submission Format: PDF document, containing all pictures, text and video link addresses and passwords included (if any))
- Word Format: Font: Microsoft YaHei (Chinese) or Times New Roman (English), 12 pt
- File Size: No more than 10 pages of A4 paper
- File Name: The file name should be “school name + team name + AI Challenge Technical Report”.
- Assessment Criteria: Teams are required to explain their robot system and technology implementation from the following aspects.

Appendix Table 3 Assessment Criteria for Technical Report

Area	Content
Hardware	● Mechanical Structure ➢ Describe the mechanical changes based on the official AI robot, as well as the layout for each actuator, sensor, computing equipment, and communication link between them. ➢ Offer design instructions for the mechanical interface of Outpost Perception System.

Area	Content
	● Sensor: ➢ Indicate the sensor type and sensor parameters used. For example, when it comes to cameras, the shutter type, resolution, field of view, maximum frame rate, etc. should be indicated. While for radar, its maximum measurement angle, the number of sampling points per second, measurement accuracy and the maximum frame rate, etc. should be indicated, as well as the reasons for the choice and requirements of the corresponding algorithm. ➢ Indicate the sensor parameters used for the Outpost. ● Computing Equipment: Indicate the type and parameters of the computing equipment used, and analyze the reasons for the choice in terms of program performance ● Other Hardware: Describe other communication hardware or other equipment used and analyze the reasons for the selection.
Software	Teams are required to provide a system diagram to describe the software system for their robots, and explain technical solutions of the software from the following aspects: ● Automatic Recognition： ➢ Describe the sensors and corresponding algorithms used, and explain the superiority of the algorithm from the aspects of different armor recognition, high-speed motion recognition, precision ranging and robot pose estimation, etc; ➢ Point out the performance of the algorithm, such as target recognition accuracy, frame rate and distance precision. If a learning scheme is adopted, it is necessary to point out the referenced algorithm, network architecture and learning framework employed. ● Positioning： ➢ Describe the sensors and corresponding algorithms adopted, and explain the superiority of the algorithm from the aspects of random initial locating and high-speed motion locating. ➢ Point out the performance of the algorithm, such as the locating precision, frame rate, and so on. ● Motion Planning：

Area	Content
	➢ Describe the obstacle avoidance sensors adopted and corresponding algorithms. Introduce the superiority of the algorithm used from the aspects of path planning, trajectory planning, and multi-robot motion planning. ➢ Point out the performance of the algorithm, such as the frequency of planning, maximum motion speed, obstacle avoidance ability and so on. ● Automatic Firing: ➢ Describe and recognize the gimbal control algorithm adopted by automatic firing under algorithm integration, and illustrate the superiority of the algorithm from the following aspects of firing under high acceleration motion. ➢ Point out the performance of the algorithm, such as the farthest strike distance, the strike precision, and so on. ● Global perception system of the Outpost: Describe the perception system scheme and function used by the Outpost, mainly describing the tasks implemented, the algorithms used, the way of communicating with the robot, and the strategy of assisting the AI robot system. ● Intelligent Decision-Making: Describe the decision-making framework used. ➢ If a traditional method is adopted, such as a finite state machine or behavior tree, then a logic diagram for operations is needed. If a learning scheme is adopted, the referenced algorithm, network architecture and learning framework employed should be explained. ➢ The introduction process needs to be accompanied by the execution process in the video display. A simulation environment can be used as a supplement but not as a key material ● Visual interaction and debugging system: Describe the functions of visual interaction and debugging interface, analyze the debugging process for robots during the preparation, test methods and problems from different modules solved by the debugging system.

Appendix 2 About Award Selection

Requirements

a) Academic Incentive Award

Teams that meet all the following criteria may apply for the RoboMaster University AI Challenge Academic Incentive Award through the application process before 12:00 (UTC+8) on May 1, 2021. The successful team will receive a maximum cash reward of USD $ 10,000 (pre-tax) and honorary certificate (for each member).

- Apply for the RMUA 2021
- The team has purchased RoboMaster AI robots.
- The team has presented or published a paper (including having had it accepted) at a robotics-related international conference (including but not limited to ICRA, IROS and RSS) or journal (including but not limited to IJRR, JFR and TRO).
- The published paper must contain the use of all or some of the parts on the RoboMaster AI robot platform, and have successfully tested an algorithm or innovated on its application.
- The paper must involve content related to RoboMaster competitions and platform.

b) Livox LiDAR Academic Application Award

Teams that meet all the following criteria may apply for the Livox Academic Application Award through the application process before 12:00 (UTC+8) on May 1, 2021. The successful team will receive a maximum cash reward of USD $ 6,000 (pre-tax) and honorary certificate (for each member).

- Apply for the RMUA 2021
- The team has purchased a Livox LiDAR.
- The team has presented or published a paper (including having had it accepted) at a robotics-related international conference (including but not limited to ICRA, IROS and RSS, CVPR, ICCV) or journal (including but not limited to IJRR, JFR and TRO).
- The published paper must contain the use of Livox LiDAR, and have successfully tested an algorithm or innovated on its application.
- The paper must involve content related to RoboMaster competitions and platform.

The relevance and rating of the research findings will be determined by the RoboMaster Organizing Committee.

Application Process

1. Fill in the “RoboMaster 2021 University AI Challenge Academic Award Application Form”.

2. Send the following three documents to the Organizing Committee's email: robomaster@dji.com RMUA 2021 Academic Incentive Award Application + University Name + Team Name + Applicant Name
   - "RoboMaster 2021 University AI Challenge Academic Award Application Form"
   - Relevant content of research findings (PDF/JPG)
   - Proof of presentation or publication of research findings (e.g. scans of the research findings published in the journal/online publication links/official certificates/email acknowledgements of acceptance, etc.)
3. Await review and confirmation of the Organizing Committee. The outcome will be announced within 30 working days of submission of materials.

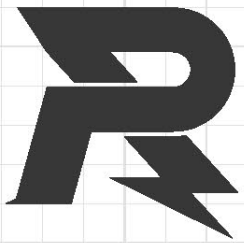
If any material is missing or the review cannot be completed, the Organizing Committee reserves the right to require the applicant to provide more information. The period of review will be calculated from the last submission of materials.

4. If the applicant has no objections to the review outcome, it will be announced on RoboMaster's official website for 3 working days from May 15, 2021. After the publicity period, the RMOC will award prizes based on the publicity results at the RMUA 2021 awards site.

"RoboMaster 2021 University AI Challenge Academic Award Application Form"

Main applicant's name		Team Name		University/college	
Awards to be applied for (one or both)		☐ Academic Incentive Award ☐ Livox LiDAR Academic Application Award			
Research findings Format		Relation of main applicant with research findings		□ First author □ Co-first author □ Corresponding author □ Other_____	
Name of journal/ conference			Title of paper/ subject		
Date of publication/ time of receipt		Is the relevant code open-source?		Open source address (if applicable)	
Description of research findings (research abstract, conclusion, applications, etc.)					
Relevance to RoboMaster AI Challenge					

Other authors of the research findings	Name	Relation with the findings	Organization	Participated in the RoboMaster 2020 AI Challenge?
*The following will be filled in by the RoboMaster Organizing Committee, and does not need to be filled in by the applicant. They are for the applicant's reference only.				
RMOC's score	Academic value score	Educational value score	Practical value score	Total
RMOC's remarks				



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