

ICRA 2019 RoboMaster AI Challenge

FAQs (as of 2019.01.10)

About the technical proposal:

关于技术方案:

1. Is the technical proposal reviewed in "First come, first review" after submission or reviewed all together after the deadline?

A: The technical solution proposal will be reviewed in "First come first review". After registering, you can also find this information on the Overview of the registration system - Technical Proposal. This setting is for the team to get the discount and prepare for the competition as soon as possible. However, it should be noted that the technical proposal needs to be written according to the rules, highlighting the rationality of the program and the team's experience and advantages in related algorithms or systems to ensure the overall content quality.

1、技术方案是先提交先审核，还是 DDL 之后一起审核？

答：技术方案是先提交先审核。大家通过报名后，也可以在报名系统-技术方案的 Overview 上面看到这个信息，这个设置是为了让队伍早日拿到优惠，早日准备比赛。但是需要注意的是，技术方案需要按照规则要求进行撰写，突出方案的合理性和队伍在相关算法或者系统方面的经验和优势，保证整体内容质量。

2. Is there a template for the technical proposal?

A: Yes, see the rules manual for details.

2、技术方案有模板吗？

答：有，详见规则手册。

3. Can the technical proposal exceed the specified number of pages? (2019.1.8)

A: For technical proposal, please try to condense the content and focus on key content. If there are still too many words, please put some of the less important content in the appendix, or attach the relevant information links or video links in the appendix

3、技术方案超过规定的页数可以吗？（2019.1.8）

答：技术方案大家可以尽量压缩，挑重点去写，实在字数比较多的，可以整理一些次重点的内容在附录中，或者附相关的资料链接或者视频链接在附录中。

4. For 2019 technical proposal, only English version can be accepted?

A: Yes.

4、2019 年的技术方案只能接受英文吗？

答：是的。

About the venue:

关于场地:

1. Is there any details of the venue?

A: Yes, the parameters of the venue are detailed in the rules manual, and the details of the supply station will be updated later.

1、场地细节有吗？

答：有，场地的参数详见规则手册，之后会更新补给站的细节参数。

2. What is the cover material around the competition venue. Is the material colored? Is it a matte material? (2019.1.8)

A: The cover around the venue is divided into three layers: bottom layer, layer with the height of the robot and the top layer. The bottom layer of cover is a solid wooden enclosure, which will ensure the normal operation of the radar. The layer with the height of the robot is currently a transparent enclosure, we are considering adding some matte material to prevent specular reflection. The top layer should still be transparent, in order to provide a high quality game watching. The detailed plan will be released in February 2019.

2、比赛场地周围的围挡是什么材料，有颜色吗，是否为磨砂材质？（2019.1.8）

答：比赛场地周围的围挡，最底层是实体木质围挡，会保证雷达的正常运行，车身高度的透明围挡，会考虑添加部分磨砂材质的以防止镜面反射；最上方的围挡，为了观赛效果应该仍然会透明。具体方案将于2019年2月份发布。

3. What is the material and color of the floor of the competition venue?

A: The floor covered with 3mm or 3.5mm thick soft PVC sheet with embossed grain.

3、比赛场地的地板材料、颜色是什么？

答：灰色荔枝纹3mm或者3.5mm的地胶。

About material purchase and robot rental:

关于物资购买和租赁:

1. For the new team, the funds are limited. How to participate in the competition?

A: After the registration is passed, the team can purchase the robot platform at a minimum of 20% off. If the funds are limited, you can also choose to submit the technical plan first. After passing the technical plan, you can get the qualifications of the rental robot or more purchasing

discounts. For details of the robot rental, please refer to the announcement of the robot rental announcement which will be published shortly afterwards.

1、对于新队伍，经费有限，如何参加比赛？

答：报名通过，参赛选手即可以最低 8 折购买机器人平台。如果经费有限，也可以选择先提交技术方案，通过技术方案后，可以获得租赁机器人的资格或更多优惠，租赁方面细节，详见之后公布的机器人租赁合同。

2. Can you buy only the mechanical structure of an AI robot?

A: No.

2、能不能仅购买 AI 机器人的机械结构？

答：不能。

3. Where can I check the purchase discount of the participating teams?

A: See the official website-announcement-ICRA 2019 RoboMaster AI Challenge material purchase announcement.

3、参赛队伍的购买优惠可以在哪里查看？

答：详见官网-公告-ICRA 2019 RoboMaster 人工智能挑战赛物资购买公告。

4. What is the AI robot rental price?

A: For details of the lease, please refer to the announcement of the robot rental announcement which will be published shortly afterwards.

4、AI 机器人租赁价格为多少？

答：租赁方面细节，详见之后公布的机器人租赁合同。

5. After buying a robot, can you purchase the goods in an unlimited amount with 40% off discount?

A: No. The purchase limit and purchase list can be found in the official website-announcement-ICRA 2019 RoboMaster AI Challenge material purchase announcement.

5、买了机器人后，可以无限量以 6 折购买物资吗？

答：不能。购买上限和购买清单，详见官网-公告-ICRA 2019 RoboMaster 人工智能挑战赛物资购买公告。

About robots:

关于机器人:

1. Can we use the robots of last year?

A: You can use the official robot purchased last year, but you need to re-purchase the new version of the 2019 referee system and meet the screening criteria to participate. Since the performance problems and overall stability of the old chassis are quite different from those of the new version of the robot, the risk of the game is borne by the team. In addition, since the old version of the gimbal motor and the chassis motor have been discontinued, the organizing committee does not provide relevant purchase and after-sales service, and no longer maintain the hardware and software of the old official robot.

1、比赛可以用去年的机器人吗？

答：可以使用去年购买的官方机器人，但是，需要重新购买 2019 新版的裁判系统且符合检录标准才能参赛。由于旧版底盘性能问题和整体稳定性与新版本机器人差别比较大，因此带来的比赛风险由队伍自行承担；另外，由于旧版的云台电机和底盘电机已经停产，官方渠道不提供相关购买和售后服务，且不再维护旧版官方机器人的硬软件。

2. Can an AI robot only be used for one year? Can I reuse it after participating in the competition?

A: No, this year's modular design is designed to make modular iterations based on this platform in the future. For example, you can replace the development board, replace the power module, etc., and do not redo the whole machine, so the service life is not One year.

2、AI 机器人只能使用一年吗？以后参加比赛能否复用？

答：不是，今年开始模块化设计，是为了今后比赛都尽可能基于这个平台模块化迭代，例如可选更换开发板，可选更换动力模块等，并不会整机重做，所以使用年限非一年。

3. Does the AI robot include Manifold2, lidar and camera?

A: Not included. The complete machine contains modules as shown in the list of lists.

3、AI 机器人包含 Manifold2，激光雷达和相机吗？

答：不包含。整机包含模块参见列表清单。

4. Is the referee system of the AI robot and the 2019 referee system of the RM competition the same version?

A: The AI robot's referee system does not have a top armour board, no picture transmission module and UWB module.

4、AI 机器人的裁判系统和 RM 大赛的 19 年裁判系统是同一版吗？

答：AI 机器人的裁判系统没有上装甲板、没有图传和 UWB 模块。

5. Is the AI robot only used for competition?

A: The entire platform can not only serve the game, but also can be used as a universal mobile robot platform with strong compatibility and modularity. The chassis module and the gimbal module can be separately debugged and used. At the same time, multiple sensor mounting holes are provided, and various types of sensors such as laser radar, RGBD camera and

industrial camera can be installed. In terms of the computing device, the platform is compatible with certain size limits. Common onboard computers such as Manifold, Manifold2, and Intel NUC, size cap Nvidia Xavier, officially support Manifold2 based on Nvidia Jetson TX2.

5、AI 机器人只有比赛用途吗？

答：整个平台不是仅仅可以为比赛服务，同时可以作为一个普适的移动机器人平台，拥有比较强的兼容性和模块化特点。底盘模块和云台模块是可以分离调试和使用的，同时提供了多个传感器安装孔位，可以安装激光雷达，RGBD 相机，工业相机等多种类型传感器。计算设备方面，兼容一定尺寸限制的计算设备，常见的板载电脑例如 Manifold、Manifold2 和 Intel NUC，尺寸上限 Nvidia Xavier，官方支持的是基于 Nvidia Jetson TX2 的 Manifold2。

6. Can AI robots participate in the RM2019?

A: Yes, but the robot needs to be guaranteed to meet the inspection specifications of the RM2019.

6、AI 机器人可以参加 RM2019 机甲大师赛吗？

答：可以，但机器人需要保证符合 RM2019 机甲大师赛的检录规范。

7. AI robot price is too high, why is the price so high?

A: The price of the robot is mainly due to the high modularity and performance requirements of this year's robot. Therefore, the cost of the new version of the modular referee system is also high. Therefore, the rental and program screening coupons were introduced according to the previous questionnaire. At the stage, we hope to encourage the team that really has the strength and energy to enter the competition to register.

7、AI 机器人售价太高了，为什么定价如此高？

答：关于机器人价格问题主要是今年的车因为模块化和性能要求比较高，所以整机附带新版模块化裁判系统后的成本也很高，因此根据之前的问卷才推出了租赁和方案筛选优惠券的阶段，希望鼓励真正有实力和精力投入比赛的队伍踊跃报名。

8. If we are using the ICRA 2018 RM AI Challenge robot which have been modified, what are the requirements? (2019.1.8)?

A: The robot modification needs to comply with the referee system installation specification and the competition inspection specification. What needs special explanation is:

(1) All-directional shooting mechanism is forbidden;

(2) Due to the power of robot is not limited, it is forbidden to modify or add other drive mechanisms, such as using the unofficial motors to replace the official ones or using non-motor solutions to greatly improve sports performance. Allow 2018 version of the robots to upgrade their motors to the latest generation RoboMaster motor;

(3) Adding or modifying mechanisms which interfere others' competition is forbidden;

(4) Adding or modifying mechanisms that cause safety hazards is forbidden

If you still have some questions in robot modification, you need to ask the official in advance. The final interpretation is owned by the official.

8、如果使用 ICRA 2018 RM AI Challenge 的机器人，因为有改装过，如何保证满足 2019 年比赛的要求？(2019.1.8)

答：机器人改装需要符合裁判系统安装规范和比赛检录规范，需要特别说明的是：

- (1) 禁止改装全向射击；
- (2) 由于功率不限制，禁止改装或增加其他驱动机构，例如更换非官方电机或采用非电机方案大幅提升运动性能等。允许 2018 版本机器人升级迭代 RoboMaster 官方新一代电机；
- (3) 禁止增加或改装干扰他人比赛的装置机构；
- (4) 禁止增加导致安全隐患的装置机构。

如果有不确定的改装需求需提前向官方询问，最终解释权归官方所有。

9. Is it allowed to modify and adjust some other mechanical structures of the robot, except the ammunition magazine. For example, suspension and motor parts. (2019.1.8)

A: The 2019 AI Challenge is a game that focuses on robotic algorithms. The robots are not required to move in irregular terrain. Therefore, in order to ensure the fairness of the game, the rule only allows the sensors connection structures and ammunition magazine to be modified and adjusted. See detailed answer in question 8.

9、AI 机器人的机械结构除了取弹仓能够改动，其他部位能做调整吗？比如说悬挂与电机等部分。(2019.1.8)

答：2019 年 AI 挑战赛是偏向机器人算法的比赛，机器人没有不规则地形运动需求，因此，为了保证比赛公平，规则只允许为了搭载传感器而对于整机连接件的改装，补给子弹的弹仓部分的改装。其他见问题 8。

10. When will be the release date for the 3D CAD drawings for AI robots?

A: In mid-January 2019

10、请问 AI 机器人的三维图纸将于什么时候发布？(2019.1.8)

答：2019 年 1 月中旬。

11. Whether it is allowed to use the quadrature encoder?

A: Yes. As long as the installation complies with the modification specifications and inspection specifications. Quadrature encoder can only replace the data of motor encoder, in order to obtain more accurate odometry information. It is noticeable that the AI robot must have the ability to actively sense the surrounding environment and have a collision-avoidance motion planning, thus it is also necessary to use sensors that sense obstacles, such as depth cameras or Lidar, etc. Any robots that sense the obstacles through collision is not allowed, therefore the teams need to indicate their technical solutions in the technical reports.

11、允许正交码盘使用吗？

答：允许，安装需要符合改装规范和检录规范。正交码盘一般只能替代电机编码器而获得更准确的里程计信息，使用需要注意的是，比赛机器人必须具备主动感知的能力，因此还需要感知障碍物的传感器搭配使用，例如深度相机或者激光雷达等，任何通过碰撞感知障碍物的机器人都不能上场比赛，因此参赛队需要在技术报告中指出相应的技术方案。

About the registration stage:

关于报名阶段:

1. At present, my registration has passed. What should I prepare?

A: Pay attention to the following time, and prepare for the competition according to the preparation process of the registration system.

From now on - 1.18 registration

From now on -1.10 The first materials purchase order

From now on -1.22 technical proposal submission (optional)

1、目前我报名通过了，我应该准备什么？

答：留意以下时间，按照报名系统的备赛环节进行准备比赛。

即日起-1.18 报名

即日起-1.10 第一批物资购买

即日起-1.22 技术方案提交（可选）

2. By signing up, can we rent a robot now?

A: No. The robot can only be rented after the technical proposal.

2、通过报名了，我现在能租赁机器人吗？

答：不能。只有通过技术方案后，才能租赁机器人。

3. Can I buy a robot after signing up not in the name of a university?

A: Yes. For detailed purchase process, please refer to the official website-announcement-ICRA 2019 RoboMaster AI Challenge material purchase announcement.

3、以非学校的名义，报名通过后我能购买机器人吗？

答：可以。详细购买流程请见官网-公告-ICRA 2019 RoboMaster 人工智能挑战赛物资购买公告。

4. How long does it take to verify the competition registration?

A: 2-5 days.

4、报名审核要多久时间？

答：2-5 天工作日。

About learning and open source materials:

关于学习和开源资料:

1. Does the official have open source information for the simulator?

A: The new Simulation module will not be provided in the new season. Only the ROS-based Gazebo and Stage will be used in the open source framework to simulate the robot environment. The simulators for training and learning are still under development. Welcome to join our discussion.

1、官方是否有做模拟器的开源资料？

答：新赛季中官方不会提供新的 Simulation 模块，只会在开源框架中配套基于 ROS 的 Gazebo 和 Stage 来仿真机器人环境，关于训练和学习部分的模拟器仍在研发中，欢迎大家交流讨论。

2. For the first time, do you have any study materials?

A: The DJI engineer, Li, wrote a tutorial for 2019 competition. Everyone can refer to relevant theoretical knowledge to learn.

English version:

https://www.reddit.com/r/ROBOMASTER/comments/9m31qb/an_introduction_from_robomaster_ai_challenge_to/

Chinese version: <https://zhuanlan.zhihu.com/p/44117460>

Because of last year's general feedback that the development of the official platform is more difficult, we will open source related 3D STEP drawings, the underlying embedded source code and the upper-level RoboRTS framework source code based on ROS package. The modularization of the entire hardware platform, as well as the better decoupling interface and functional modules of the entire system software part, the team members can better focus on the development of their own modules. At the same time, the supporting technical documentation, text and video tutorials have been improved.

2、第一次参加，有学习资料吗？

答：之前大疆工程师 Li 写过一篇 2019 年的参赛攻略，大家可以参考相关理论知识进行学习。

英文版：

https://www.reddit.com/r/ROBOMASTER/comments/9m31qb/an_introduction_from_robomaster_ai_challenge_to/

中文版：<https://zhuanlan.zhihu.com/p/44117460>

由于去年大家普遍反应官方平台上开发比较困难，我们新赛季将开源相关三维 STEP 图纸，底层嵌入式源码以及基于 ROS 包的上层 RoboRTS 框架源码。整个硬件平台的模块化，以及整个系统

软件部分更好的解耦接口和功能模块，队员可以更好的专注于自己模块的开发。同时完善了配套的技术说明文档，文字与视频使用教程。

About the referee system:

关于裁判系统:

1. If it is possible to get the enemy information through the referee system during the game?
(2019.1.8)

A: No, the enemy's information cannot be obtained through the referee system during the game.

1、比赛时是否可以通过裁判系统获取敌方的信息？（2019.1.8）

答：不可以，比赛时敌方的信息无法通过裁判系统获取。