

Campus buffet partner pepper robot

Hangzhou Green City Yuhua school





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# PART 01

# Creative background



## (second) The scene faced by the canteen



Students' civilized dining



The dining time is relatively concentrated, and the humanized service is not easy to guarantee

The flow of people in the school restaurant is large, which is not convenient for statistics



Dining without order

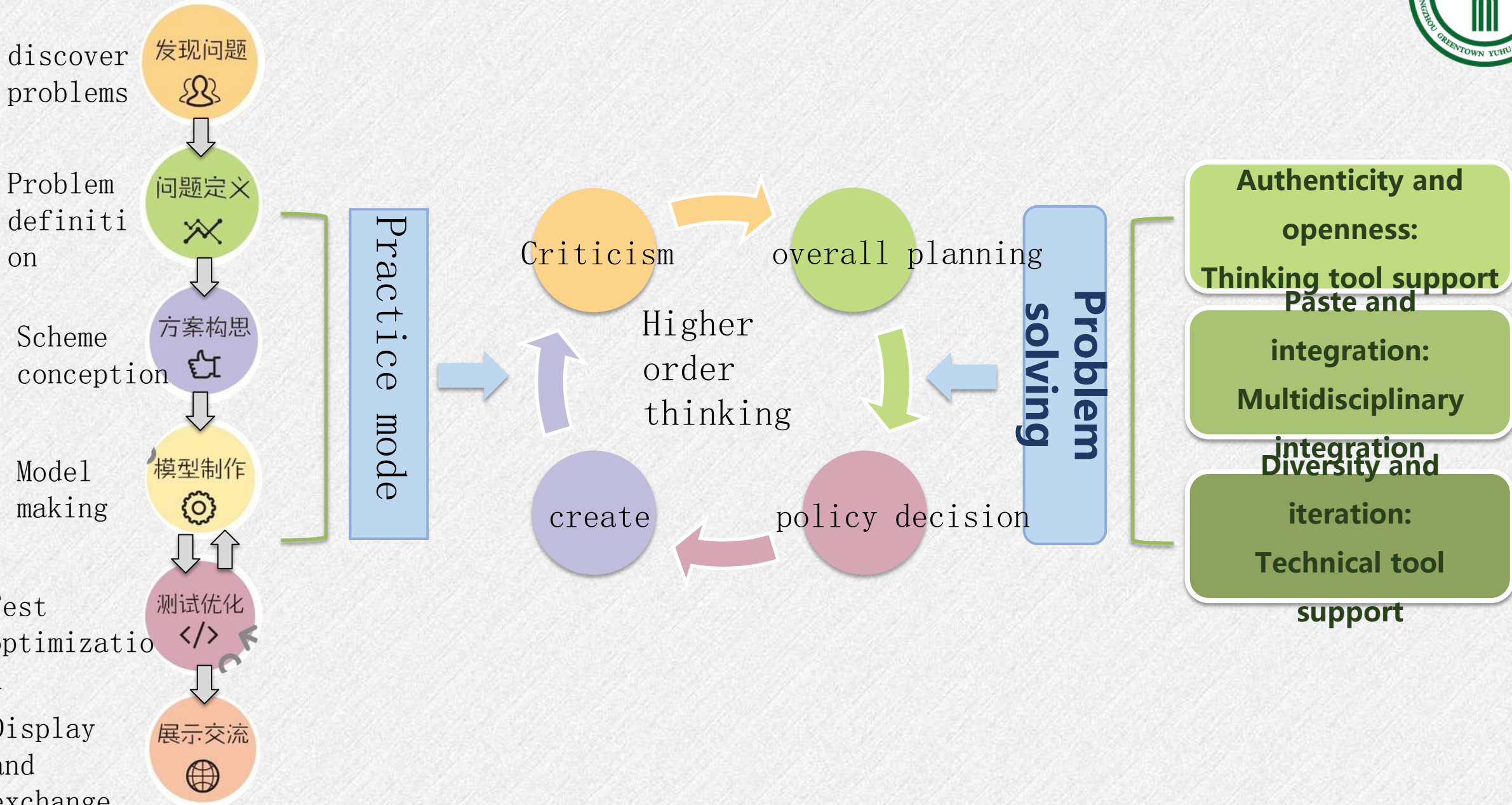


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## PART 02

# Creative ideas

# The research framework of our team





# Creative ideas and application scenarios



In the five-star campus cafeteria dining at the same time, we meet the staff diversion, star consulting services and real-time data feedback, these have been puzzling us how to solve the problem?



Grooming of dining staff in canteen -- face statistics

Dining consultation service of canteen -- intelligent consultation

Feedback statistics of dining in canteen -- AI voice and text



# AEIOU Observation record



(一) A.E.I.O.U 观察记录表

观察的场景	学校自助餐食堂				
思维的类型	A (活动)	E (环境)	I (互动)	O (物品)	U (用户)
思维实施的模式	干什么	看到什么	人与人、物	与人类关联	注意到的
思维具体的展开	你所看到的人群在干嘛	你看到咋样的场面	人与人或物的关联	产生关联的物品	被你注意到的人
计划如何解决	1. 在食堂用餐。 2. 有同学大声聊天, 影响秩序。 3. 排队的人很多	1. 回收区有很多浪费的食物 2. 人很多, 会造成拥挤加阻塞 3. 有同学想问问题却找不到人问	1. 机器人可以直接观察到进餐厅的人数, 并控制 2. 回答同学的问题 3. 检查同学的浪费情况	1. 餐盘 2. 机器人 3. 菜谱 4. 用机器人	1. 低年级小朋友 2. 秩序不好的同学 3. 常有浪费行为的同学

(二) 用户移情表 (要认真感受, 学会换位思考)

“我”在思考什么, 有什么样的感受 这个机器人为什么可以做什么? 我们需要怎么做呢?	“我”看见了什么 机器人十分有序地立梳理人数以及工作
“我”听到了什么, 周围的人在说什么? 机器人说话速度, 语调正常, 可中英文切换, 周围人都十分满意。	“我”说了什么/做了什么? 我向同学们介绍这个机器人的用法以及用处。
“我”感到痛苦的事情是什么? 编写程序较复杂, 很容易出错。	“我”希望得到什么 方便使用, 方便操作的一个机器人。

项目名称: 校园自助餐 小组名称: V the A the U

(描述程序的整体设计)  
将机器人有能力描述的, 控制反映的内容进行归纳, 形成较有体系的汇报流程以及步骤, 将自动识别所规定数量, 并给予相关反馈。

(开始)	当自动识别时, (成功识别别人脸) ↓ 嘿XXX, 你来了, 请进吧 (同时将人数加一) ↓ 当提出: 今天的菜有什么? (提前设定菜谱并回复)
(中间)	(当人数 > 90时) ↓ 说: “目前就餐人数太多了, 建议等待下一批。” ↓ (当人数 < 90时) ⇒ 请进, 祝您用餐愉快。
(中间)	(当倒出食物大于 60g) ↓ 说: 同学, 同学, 我们要“珍惜粮食, 下次注意哦!” (当倒出食物小于 60g) ↓ 真是亲爱的好少年, 为你点个赞!
(结束)	(当选择用餐结束的词语时) ↓ “好的, XXX已完成中午用餐, 今日总体情况较好, 期待与你下次相遇! 拜拜!”

A. E. I. O. U model can make the design more efficient. It is difficult to count the flow of students in cafeteria, the self-service humanized consulting service can not be guaranteed, and the scientific guidance of civilized eating habits can start the program design.



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## PART 03

# Practical research





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同学1  
帮助老师收作业，进行  
调查，当有人未交的时候，  
进行录入，根据完成度来  
进行不同程度的惩罚。

同学2  
可以连接一本本放在机  
器人的手上或监控中，并且  
做到分类，做完之后，机  
器人会将做好的作业带  
到老师办公桌上。

同学3  
老师白天发个作业单，可以  
通过语言识别，来识别是  
谁交了作业，或是报学号  
来识别是谁交了作业。

同学4  
同学交作业的时候可以一  
些话术来提醒他们或者提  
醒他们要及时交作业。  
课前提问完就马上交给  
同学时，借给手机照一张  
这张后，便马上交给老师。

同学5  
把各个时间段交的作业  
交作业，如有不交作业的，  
将其名记下，交了老师，  
第二天早晨，电脑统计  
并小结给老师发过去  
给老师。

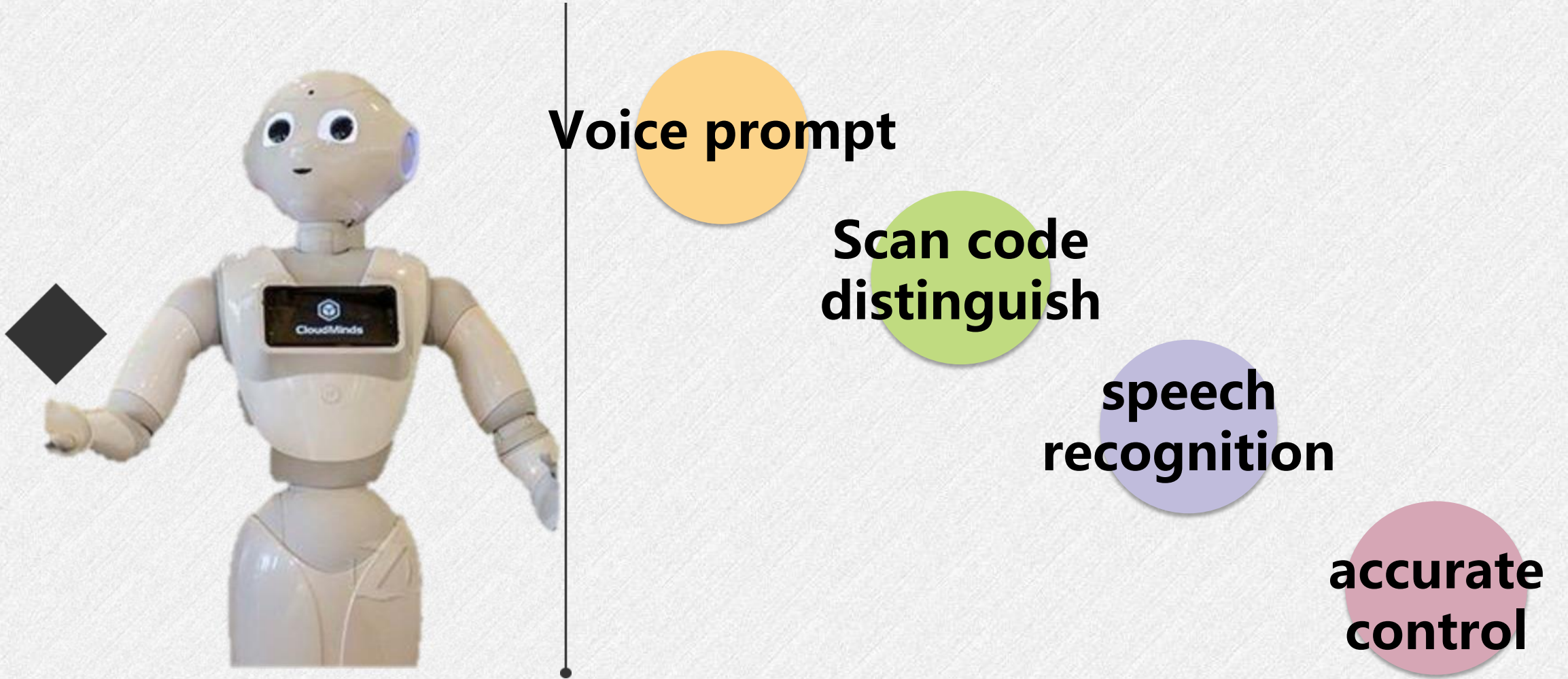
同学6  
如果交作业时间太久  
了，机器人会提醒他  
们交作业，提醒完  
来，机器人会继续进  
行收作业的程序。



# Brainstorming



## (四) How to solve the problem of test compilation





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当人脸被识别出来时
  说 我们又见面了, 很高兴见到你! 语调 100 语速 100
  将 就餐人数 增加 1
  用字体 黑体 显示文字 连接 你是我今天看到的第 和 连接 就餐人数 和 位
  将屏幕触摸设为 有效
  如果 就餐人数 > 10 那么
    说 目前就餐人数太多了, 建议您等待下一批! 语调 100 语速 100
  否则
    说 欢迎光临, 祝您就餐愉快 语调 100 语速 100
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## Program algorithm

After the face is recognized, the number of people is recorded by variables, and effective counseling is carried out according to the number of people in the restaurant, and students are informed whether to eat by reminding.



当 触摸左手背 ▾ 时

QiChat主题: 打招呼

u: 0 用户 你好 机器人 你好,我是Pepper机器人,很高兴认识你!怎么称呼你?

u: 0 用户 我叫\* 机器人 欢迎光临我们的准五星自助餐厅!

u: 0 用户 自助餐怎么样 机器人 非常棒,我们的自助餐可是五星标准!

u: 0 用户 自助餐费用呢 机器人 非常棒,我们的自助餐可是五星标准!

u: 0 用户 听说这里烧烤很不错! 机器人 有眼光,请问你喜欢羊排还是牛排?

u: 1 用户 羊排 机器人 不知道阁下羊排需要几分熟

u: 2 用户 \*分熟 机器人 耐心等待,就餐愉快!

u: 1 用户 牛排 机器人 不知道阁下吃牛排需要蘸酱?

u: 2 用户 \*需要 机器人 呵呵,看得出你挺有范!

开始QiChat

当 触摸右手背 ▾ 时

停止QiChat

learned that human conversation is not a single round, but a natural multi round conversation.

Every time I have a conversation with pepper, the answers will be different. I wonder if I can branch these answers and come up with a natural dialogue.

AI communication intelligent answer questions



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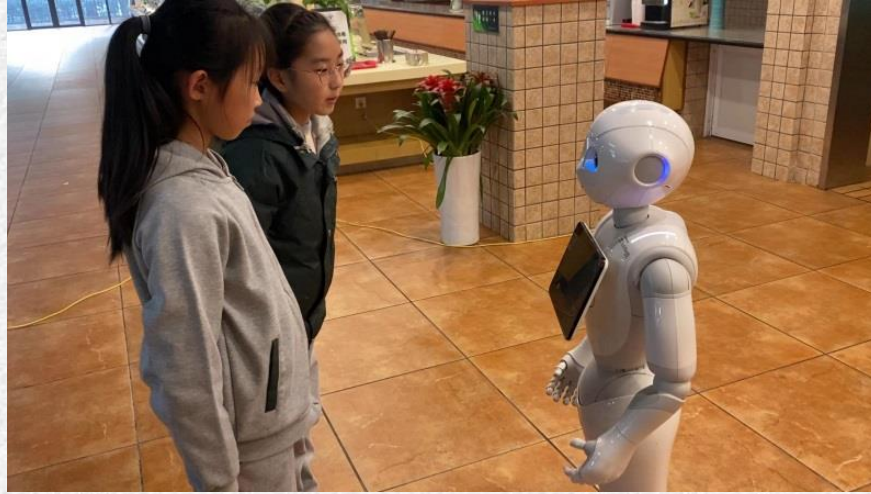
## PART 04

# Practical thinking



# Show Time

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# Difficulties and challenges

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- The contrast between ideal and reality
- Pepper robot is easy to be disturbed by the external environment;
- Accuracy of code scanning identification;
- Recognition of speech recognition;
- Limitations of pepper program compilation.



# 仁愛 · 求真

Benevolence Seeking truth

Thank you for  
listening  
I would appreciate  
your comments.





# Project research on buffet in Pepper canteen

The small project of problem research involves the practical application scene of pepper robot. Students can flexibly choose or draw up a research direction to explore in combination with campus life!

Program name: Campus buffet companion robot School buffet canteen

Team Leader: Fang Guduo

Group members: Li Jiarong Chen Minghui Qi Leyi Ma Jiahe

## 1、 Finding problems

### (一) A.E.I.O.U Observation record

The scene of observation	School buffet canteen				
Categories of thinking	activity	environm ent	Interacti ve	goods	Users
The mode of thinking implementation	What to do	What do you see	People and things	Connect with people	I noticed
The concrete development of thinking	What do you see in the crowd	What kind of scene do you see	The association of people or things	Related items	The people you notice

<p>How to solve the problem</p>	<p>1. Dine in the cafeteria 2. Some classmates chat loudly, affecting the order 3. There are so many people in line</p>	<p>1. There is a lot of wasted food in the recycling area 2. There are a lot of people, which will cause congestion and congestion 3. A classmate wants to ask a question, but no one</p>	<p>1. The robot can directly observe and control the number of people entering the restaurant 2. Answer questions from classmates 3. Check the waste of classmates</p>	<p>1. Dinner plate 2. Robot 3. Recipe 4. Diner</p>	<p>1. Lower grade children 2. Classmates in poor order 3. Students who often have wasteful behaviors</p>
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**(2) User empathy table**

<p>What am I thinking and feeling</p> <p>What can this robot do? How do we need to operate it?</p>	<p>What did I see</p> <p>The robot sorts out the number and work in an orderly manner</p>
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<p>What did "I" hear and what did the people around me say</p> <p>The robot speaks speed and intonation is normal, can switch between Chinese and English, and everyone around is very satisfied</p>	<p>What did I say / do?</p> <p>I introduce the usage and usefulness of this robot to my classmates</p>
<p>What are the things that "I" feel painful about</p> <p>Programming is more complicated and error-prone</p>	<p>What do I want</p> <p>A convenient, practical and easy-to-operate robot</p>

## 2、 Problem definition

### 2.1 definition of brainstorming problem

I observed: (please write down the users you observed): Buffet students

I found out: (please write down your novel discovery)Some students have bad eating habits; Crowding; The humanized service of the restaurant can not be solved in time

I guess this may be because: (please write down your inferences about potential needs)The effect of oral reminder is general, and the management of students' dining is improper

So I think the problem to be solved is: who are we going to work for. Do something to solve some problems)Scientifically guide students to cultivate civilized eating habits; Effectively guide students to eat

### 2.2 role change and problem record

The role of transformation	Dining students	note-taker : <u>Li Jiarong</u>
Scene description	After face recognition, the number of people will be recorded. According to the time of the restaurant and the number of people, effective counseling will be carried out, and students will be informed whether to eat or not by reminding	
Asking questions	It is difficult to count the number of students in cafeteria; The self-help humanized consultation is not guaranteed; How to effectively guide students to eat	
Preliminary idea	<p>After face recognition, the number of people is recorded, and effective grooming is carried out according to the number of people in the restaurant</p> <p>After face recognition, conduct personality counseling and related guidance</p> <p>Carry out a reward and punishment system to improve the students' enthusiasm for eating and learning</p> <p>Using scientific methods to guide students' civilized eating habits</p>	

### 3、 Scheme conception

Student1

When someone enters the buffet, facial scanning will be used to determine the information of the person, and the number will be limited when the count reaches a certain level, so as to ensure the dining environment and quality. If students find that they have not purchased the buffet, they will automatically contact the teacher, and the upper limit will be popped up. This group of people has reached the upper limit, please have the next meal

Student3

When the number of people in the cafeteria reached the maximum number of people, the robot recognized the next person and said: Currently there are too many people, we suggest you wait for the next batch, and then remind the students to enter the cafeteria after the number of people decreased

Student5

The operation of remote control robot can be carried out on the mobile phone APP to reduce the management pressure of teachers and break the limitation of time and space to manage the order of the restaurant remotely

student2

When someone wastes food, they will analyze it through big data based on their personal information and personal integrity records, take rewards and punishments according to their different waste situations, and report it to the teacher

Student4

When there are students eating some related problems can be consulted to the robot, to ensure the personalized service of the cafeteria, to avoid the personalized service when the concentration of personnel, to avoid the personalized service can not be guaranteed when the concentration of

Student6

When students consult, the answer of the robot may be relatively simple to make the answer of the robot more natural. Diversified some answer language branch processing, so as to make it natural

**General mind map can refer to the following parts: scene, appearance, action, language, programming technology**

### **Core functions**

**Voice function: millisecond response speed, answer questions**

**Identity recognition: realize identity security detection through face recognition**

**Indoor leading: simple and intelligent mapping, independent to avoid obstacles, realize indoor fixed-point leading**

**Scene publicity: know what dishes will be available every day, and publicize the content every day**

**Activity status: anti skid device, not broken appearance**

**There are high-definition cameras and seven inch screen, support a variety of expressions and clearly identify people, count**

**Rotary steering gear, touch sensing has been supporting the degree of freedom of the manipulator, automatic sensing mode, wake-up action is flexible**

**Intelligent chassis, independent to avoid obstacles, can build 200m \* 200m super large range map, high security.**

**Pepper has humanized design and body language to facilitate communication with people**