

A Case of Outstanding Students' Work Based on Pepper
Robot

Speech Recognition&Scanning Code" Multifunctional Pepper Robo





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PART 01

Backgrounds of the Creation



(1) The situation of collecting homework

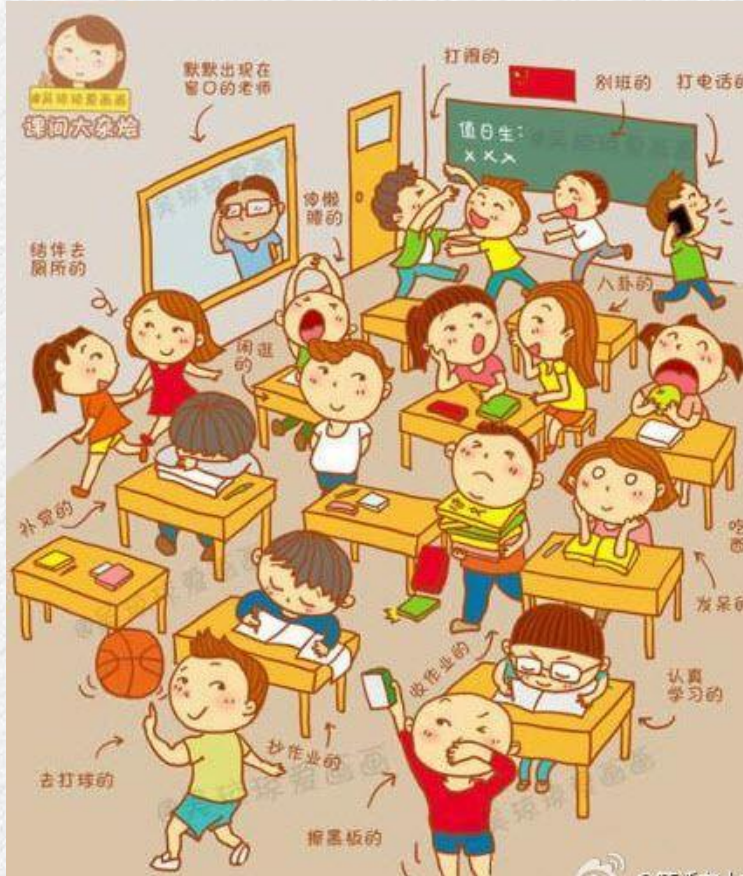


There are many situations in collecting homework

collect for several times



(2) The situation of collecting homework



After classes



During self-study classes



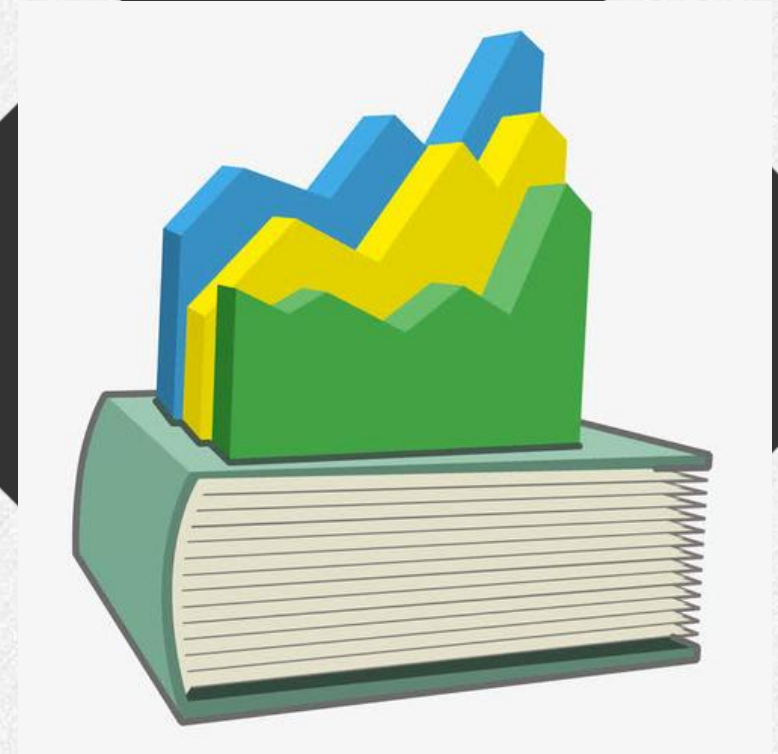
(3) Distress faced by harvesting operations



Time-consuming and laborious



Troublesome statistics





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PART 02

ideas of the Creation



ideas of the Creation and applicational scenarios



Regardless of whether you are a teacher or a subject representative, you are faced with these problems in receiving homework every day. Sending and receiving are too slow, time-consuming and labor-intensive, and feedback is delayed. Our team takes these problems with us, after our investigation, thinking, practice, and exploration, we use Pepper robots to solve the above-mentioned problems: it can easily scan the code to hand in the homework, voice recognition to hand in the homework, and can also be “precisely” remotely controlled. The design is tall?



Regular homework: scan the code to hand in the homework



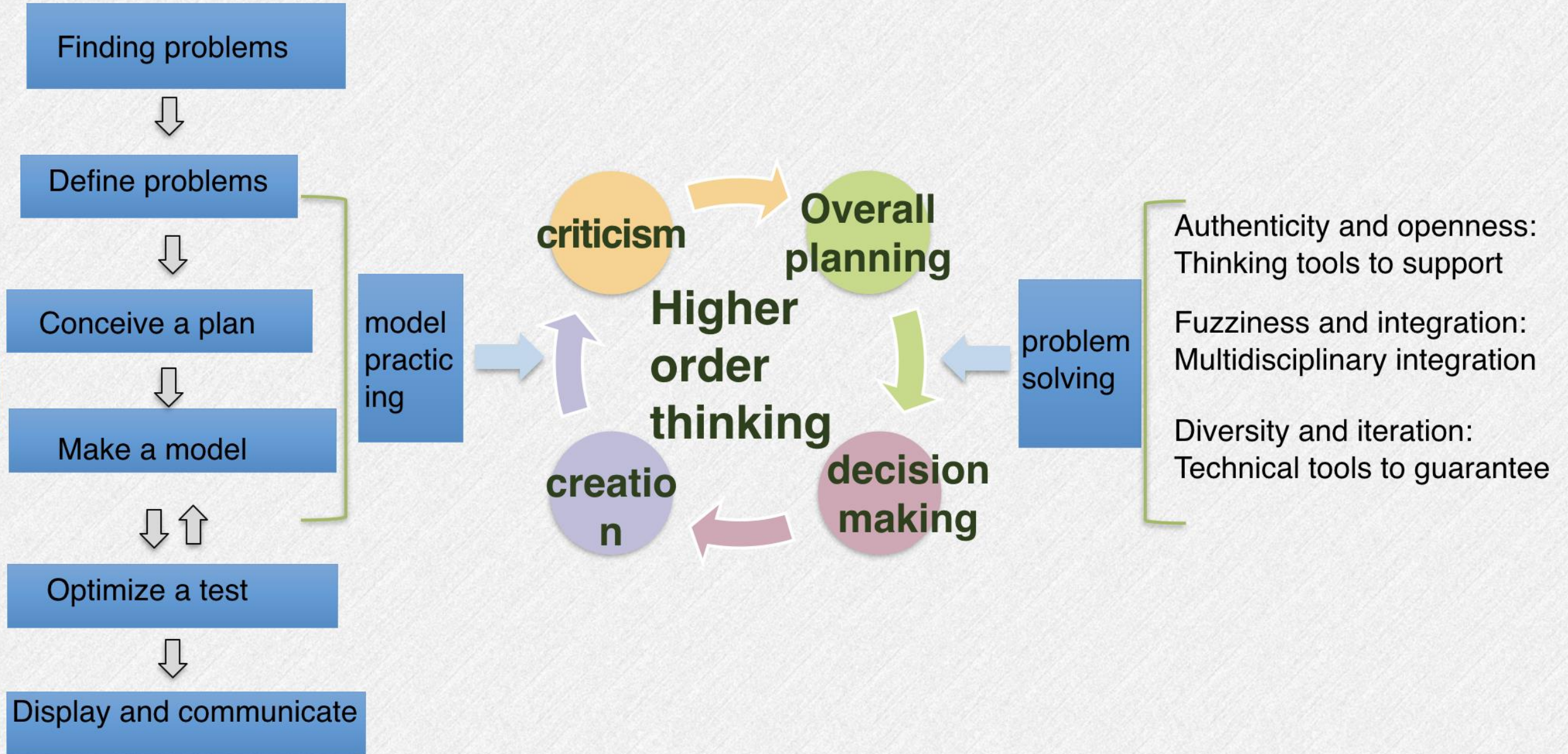
Temporary homework: use the speech recognition to hand in the homework



Timely statistics of feedback: use speech or text for feedback



Pepper's theoretical framework of "speech recognition&Scanning Code" multifunctional receiving the homework





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PART 03

Practicing



1. Finding problems: what problems did we encounter in combining the actual situation



1. The process of collecting homework is time-consuming and labor-consuming;
2. There are a large number of tasks of statistics to collect homework;
3. The feedback of the result of receiving homework lags behind.

Finding

refining

Focusing

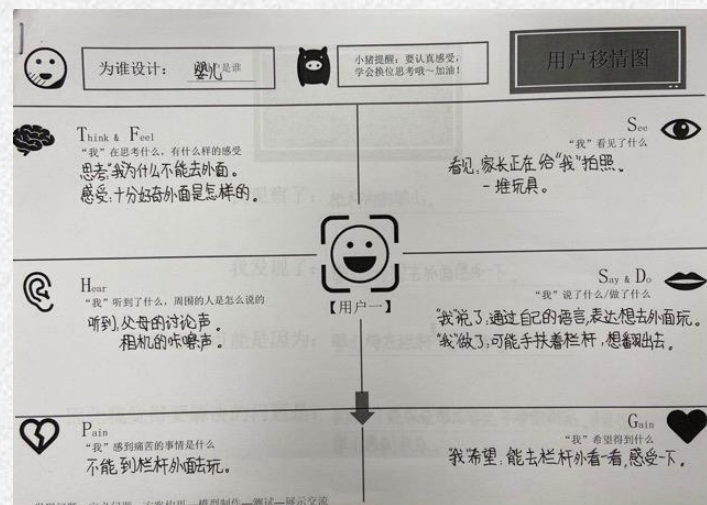
solving



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Observation Record Form of AEIOU



User Empathy Map

Thinking analysis



635 method



2. Refining problems: what problems did we solve in the current situation



1. Student ID name link
Complete the routine
2. Homework by scanning the code
3. Complete temporary homework through speech recognition

Finding

refining

Focusing

solving



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Brainstorming



同学1 帮老师收作业,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 可以直接一本本放在机 器人的手上或篮框中并且 做分类,做完之后,机 器人会将做的作业带 到老师办公室。
同学3 写作业 老师今天不上课,所以 通过语音识别,来分辨是 谁做了作业,我再按学号 来识别是谁做了作业。	同学4 同学写作业可以说一些 话话来鼓励他们,或者报 道他们哪天没写作业。 遇到没写完的作业,一定 同学时,给给予提醒,一定 次数后,便会上报给老师。
同学5 每个时间段定时提醒学 生写作业,如有不写作业 特意为记下,交给老师, 每周汇报,电脑统计 并小结班级情况汇报 给老师。	同学6 如果写作业时间有的人太 久了,机器人会提醒他 们要换,然后提醒他们 来,机器人会提醒他 们写作业的程序。





3 . Focusing on the problems: how do we plan to solve the problems



in combining with the actual situation

1. The time-consuming and labor-consuming process: use Pepper to replace;
2. Tasks of statistics: use the program to calculate automatically
3. Lagging feedback: use speech or text to presentation

Finding

refining

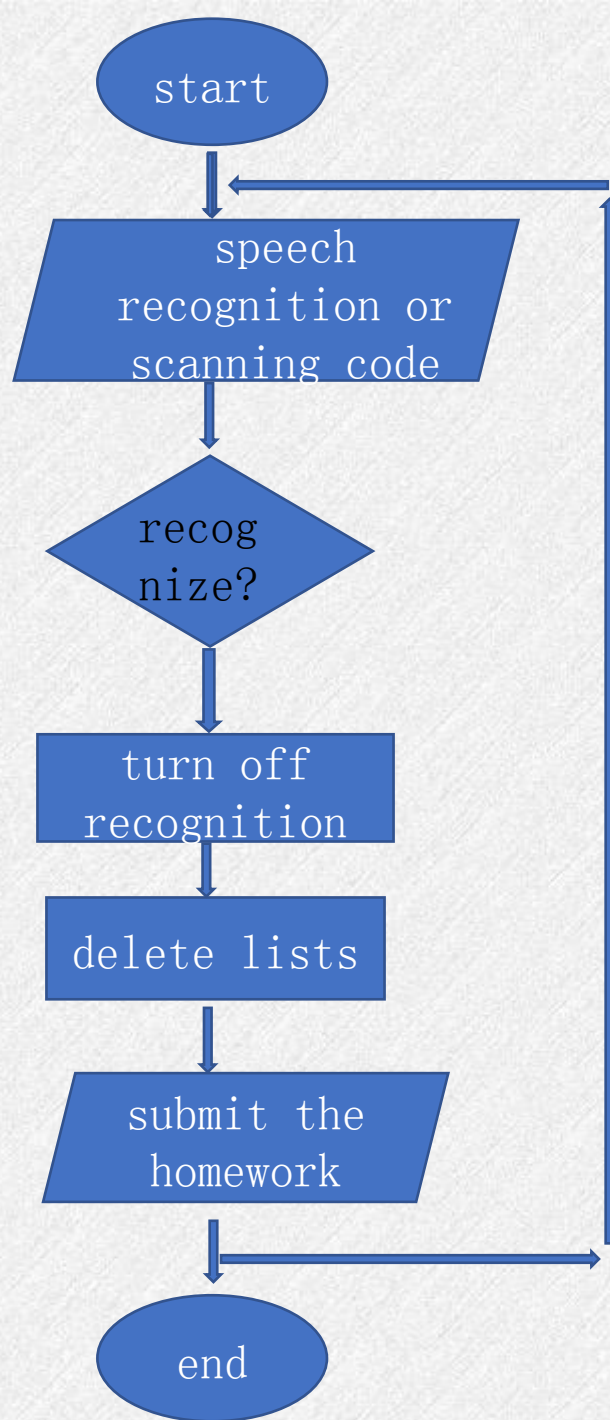
Focusing

solving





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Mainly rely on Pepper to complete the task of collecting homework, which can save the energy of teachers and subject representatives to collect homework, and at the same time, real-time statistics can be realized through the program. The real-time situation of collecting homework can be shown through the large screen of Pepper robot, and we also have the function of speech

Program
&Algorithm



4. Solve the problems: to test and compile, how do we solve the problem?



The connection between the thinking list and the students' number
Thinking about how the robot scans the code to recognize
Thinking about how to solve the problem of speech recognition

Finding

refining

Focusing

solving



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```
当 触摸头部 时
  将 开始时间 设为 连接 当前时间的 时 和 连接 时 和 连接 当前时间的 分 和 分
  将语音识别设为 无效
  清除识别到的单词
  删除 学号 的全部项目
  删除 姓名 的全部项目
  将 作业计数器 设为 0
  在 姓名 中的第 1 项前插入 张三
  在 姓名 中的第 2 项前插入 李四
  在 姓名 中的第 3 项前插入 王五
  在 姓名 中的第 4 项前插入 潘鑫
  在 姓名 中的第 5 项前插入 邹宇轩
  在 姓名 中的第 6 项前插入 童昊
  在 学号 中的第 1 项前插入 1号
  在 学号 中的第 2 项前插入 2号
  在 学号 中的第 3 项前插入 3号
  在 学号 中的第 4 项前插入 4号
  在 学号 中的第 5 项前插入 5号
  QR码识别 有效
  说 我开始扫码记录上交作业情况了! 语调 100 语速 100
  显示图像 ai识别
  将屏幕触摸设为 有效
```



The association of the list mainly depends on the two lists of "student number" and "name". It is associated through the serial number in the list, and when the assignment is completed, the associated items in the two lists are deleted.

The relevance of the list

```
当识别到单词时
  如果 取得 识别到的单词 的值 = 1号 那么
    将语音识别设为 无效
    将 作业计数器 增加 1
    说 连接 连接 作业提交成功! 和 姓名 中的第 1 项 和 连接 你真棒! 和 连接 当前您是第 和 连接 作业计数器 和 个完成作业的! 语调 100 语速 100
    清除识别到的单词
    删除 1 中的第 学号 项
    删除 1 中的第 姓名 项
    将语音识别设为 有效
```




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QR二维码

读取QR二维码的积木块



The program mainly uses the two-dimensional code recognition technology to convert the basic information of students into commonly used two-dimensional code, and then identify the two-dimensional code through Pepper to judge the identified content.

Scan code recognition

当QR码被识别出来的时候

如果被识别出的QR码的内容 = 1号 那么

QR码识别 无效

将 作业计数器 增加 1

说 连接 连接 作业提交成功! 和 姓名 的第 1 项 和 连接 你真棒! 和 连接 当前您是第 和 连接 作业计数器 和 个完成作业的! 语调 100 语速 100

删除 1 中的第 学号 项

删除 1 中的第 姓名 项

QR码识别 有效

QR二维码

当QR码被识别出来的时候

QR码识别 有效

被识别出的QR码的内容



The program mainly uses the two-dimensional code recognition technology to convert the basic information of students into commonly used two-dimensional code, and then identify the two-dimensional code through Pepper to judge the identified content.

Speech Recognition

```

当识别到单词时
如果 取得 识别到的单词 的值 = 1号 那么
  将语音识别设为 无效
  将 作业计数器 增加 1
  说 连接 连接 作业提交成功! 和 姓名 的第 1 项 和 连接 你真棒! 和 连接 当前您是第 和 连接 作业计数器 和 个完成作业的! 语调 100 语速 100
  清除识别到的单词
  删除 1 中的第 学号 项
  删除 1 中的第 姓名 项
  将语音识别设为 有效
如果 取得 识别到的单词 的值 = 2号 那么
  将语音识别设为 无效
  将 作业计数器 增加 1
  说 连接 连接 作业提交成功! 和 姓名 的第 1 项 和 连接 你真棒! 和 连接 当前您是第 和 连接 作业计数器 和 个完成作业的! 语调 100 语速 100
  清除识别到的单词
  删除 1 中的第 学号 项
  删除 1 中的第 姓名 项
  将语音识别设为 有效

```

```

将语音识别设为 无效
识别 1号;2号;3号;没有完成;结束
说 我开始语音识别记录上交作业情况了! 语调 100 语速 100
显示图像 语音识别
将屏幕触摸设为 有效
将语音识别设为 有效

```

The completion of speech recognition needs to clear the original recognition content, and it needs to be turned off / on



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PART 04

Practical thinking



Technology Application and Innovation



- The program will automatically "clear" the information of students' name list that has been handed in to ensure the accuracy of the statistical data.
- In terms of ways of assignment hand-in, we scan code to recognize to hand in the regular assignments, while use vocal recognition to hand in the temporary ones.
- In the process of vocal recognition, sometimes to recognize our voice is easy to "get out of control". For this, our program flexibly designs a vocal recognition switch for the Pepper machine.
- The interconnection between Micro:bit and Pepper robot is solved, and the precise remote control is realized.
- The problem of inaccurate scanning code is solved, and the success rate is up to 100% in practical use.

Difficulties and challenges



- We hope to automatically recognize the basic information of students who hand in their homework through face recognition, so that the follow-up practicality and convenience will be greatly improved.
- The vocal recognition of the program is currently limited by the positions of the robot.
- At present, tests to the Pepper have high requirements for environment and sound, and to test outdoors will have a certain influence on its effect.
- The recognition distance of Pepper is about 10 cm in the process of scanning code, and there is a requirement for the size of QR code.



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PART 05

team introduction

团队介绍



Team Leader:

潘鑫



Team Members:

洪昊东 (Planning Director) 吴雨汐 (Design Director) 潘凯昕

(Technical Director) 马园玺 (Publicity Director)

鲍艾宸 (Art Director)

田



Instructor:

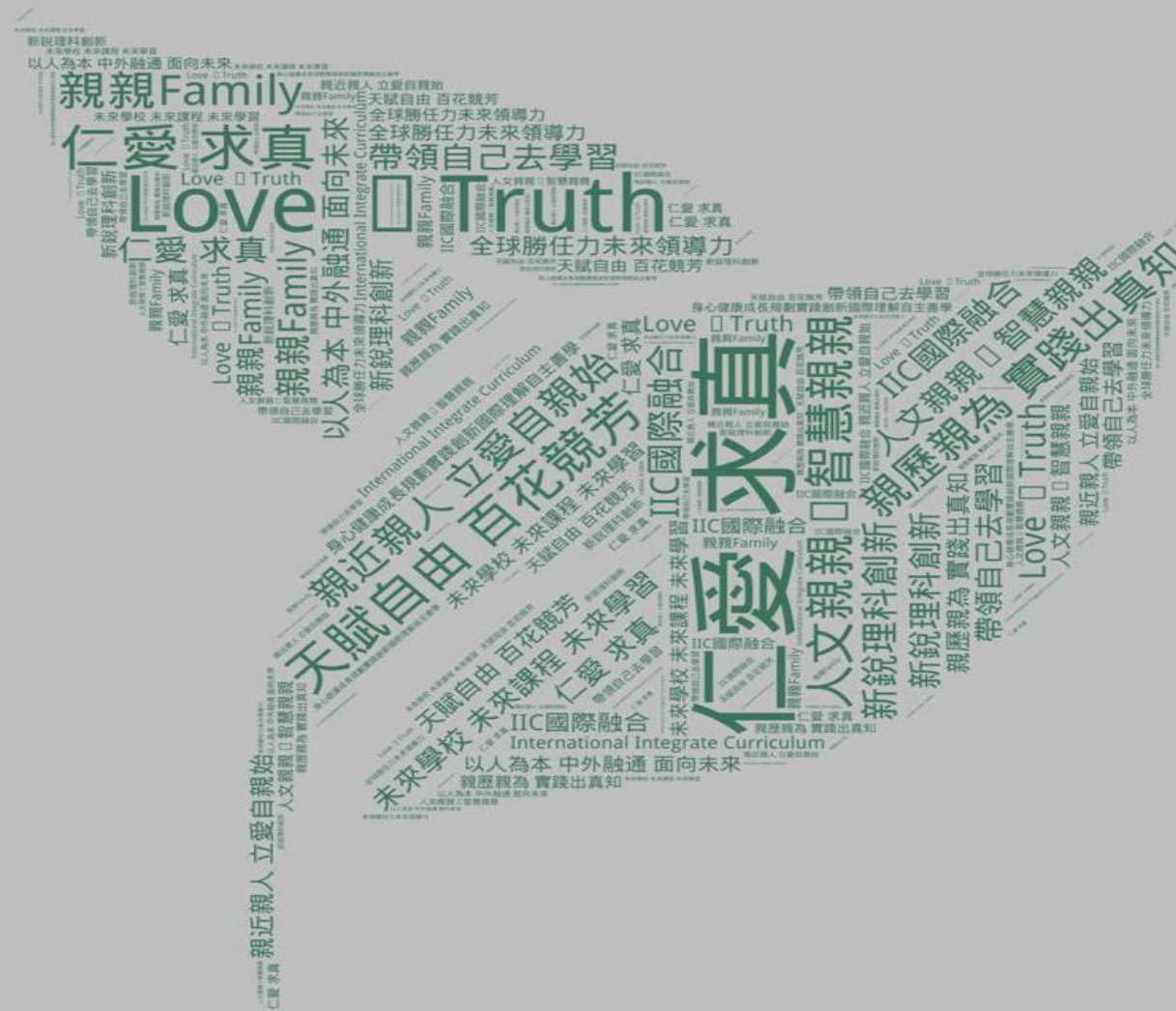
康金元

仁愛 · 求真

Benevolence

Seeking truth

Thanks for listening! Welcome your comments!



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Project research on pepper book sorting and finishing

The small project of the study of the problem concerns a practical application scenario of the pepper robot, where classmates can explore in combination with campus life for flexible choices or self fit in the direction of one study!

Scheme name : _____Pepper robot for multi-function voice code scanning and receiving_____ group leader : __Pan Xin__ Cohorts : Hong Haodon Pan Kaixin Bao Aichen Wu Yuxi Ma Yuanxi

1、 Detecting problems

(1) A.e.i.o.u observation record form

Observed scenarios	classroom				
Categories of thinking	A (active)	E (Envir onmental Science)	I(interac tion)	O (goods)	U(user)
Patterns of thought implementation	What do you want?	What to see	Human and S.E	Correlates with people	Of note
Thought specific unfolding	What are the groups you are seeing	You see scenes like this	Human or substance Association	Items generating associations	Was noticed by you

How to plan	Some students are still doing their homework	1. There are all kinds of situations in the operation 2. Repeat several times	1. The robot can collect the work more conveniently and quickly 2. The robot can count the number of submitted jobs	1. Exercise book 2. Test paper	1. Class representative 2. Students who hand in homework 3. Students who are still struggling to do their homework
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(2) User empathy form (to feel seriously and learn to transpose thinking)

<p>" " what are I " " thinking and what are the feelings</p> <p>Can we not only save the number of students who need to be counted, but also know which students have not handed in</p>	<p>、 What I saw</p> <p>Can we not only save the number of students who need to be counted, but also know which students have not handed in</p>
<p>" " I " " heard anything, what did the people around</p> <p>When you hear that, put the books well, don't throw them. When you hear the students call my name, fly the books over</p>	<p>" " what am I " " saying / doing?</p> <p>I said don't litter, while sorting books</p>
<p>What are the things that 'I' feel distressed</p> <p>A lot of students throw their exercise books over. When counting the number of students, they need to count in tables, which is very troublesome and time-consuming</p>	<p>What do " " I " " want</p> <p>Do not need a lot of time to count the number of people, save time</p>

2、 Question definition

2.1 brainstorming question definition

(using the POV problem definition, further making it clear where the problem is going, the real needs of the patch user)

I observed: (please write down the users you observed) _____ **Students and teachers**

_____ I discovered: (please write down your novel findings)_____1. There are all kinds of situations in the operation

2. Collect it several times

3. After class, there are not enough people, it's not easy to collect in class, it costs strength, and it's troublesome to count_____

I conjecture this may be because: (please write down your inferences about potential needs)_____Students' consciousness is not high and they don't pay attention to homework_____

So I think the questions to be addressed are: (for whom are we going to work. What to do, what to do well)_____The efficiency of homework collection, the right time to hand in homework, improve the students' attention to homework_____

2.2 role change, ask question log form

Role of conversion	_____Students handing in homework_____	Recorder : <u>Bao</u> <u>Aicheng</u>
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Scenario description	<p>After face recognition, record the number of this job, according to the best frequency of the students in a certain period of time, to determine the time for the robot to receive the job, through face recognition to timely feedback the job submission, temporary job speech recognition system, feedback statistics to voice text feedback</p>
Ask questions	<ol style="list-style-type: none"> 1. If there were students who didn't come for leave at that time, it was inconvenient to make statistics and the feedback was improper 2. It's not convenient to paste two-dimensional code when you issue a test paper temporarily (such as an exam) 3. One hand in homework is not finished at one time, which is not convenient for statistics 4. Submission of language homework will disturb other students (self-study class)

<p>It was initially envisaged that</p>	<ol style="list-style-type: none"> 1. Count the number of students arriving at the school on the same day, and automatically do not include the university students in the list of homework. 2. Hand in the temporary homework by speech recognition 3. Brush into the list mode. If a student has handed in the Chinese homework, check this box, and then automatically calculate the number of students who have handed in the homework, the associated list, the student number and the homework 4. Do not use language recognition in self-study class as much as possible, and hand it in after class
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三、Scheme conception

When someone does not hand in the homework, they will input it, and they will be punished according to the degree of completion.

It can be directly piled in the robot's hand or basket, and after classification, the robot will put the collected homework in the teacher's office.

The test paper issued by the teacher on the same day can be identified by language recognition

After the students hand in their homework, they can say something to encourage them or remind them, and remind the teacher after a certain number of times.

Remind students to hand in their homework in each time period. If they don't hand in their homework, write down their names and send them to the teacher until tomorrow morning.

If the people around are too noisy when they hand in their homework, the robot will remind them to be quiet until they are quiet.