**Understandable Robot Using ChatGPT**

**Using chat GPT to cluster the responses for Interview question: 3) What improvements do you want in the current design?**

**Clustering by groups:**

**Group 1:**

**1. Desire for More Detailed and Clear Error Explanations:**

**13**: I would prefer to see clear feedback in a dialogue system with the possible solutions that the robot will suggest itself  
**14**: Present the problems in more detail, allow more room for conversation to identify the problem  
**15**: Be more detailed about what the problem is  
**17**: A better display of the specific error each time it occurs  
**111**: I would like more explanation on what the error itself is and where it stems from  
**114**: To be more specific with the directions  
**51**: A more detailed answer would be preferable  
**52**: Explain precisely what it wants  
**55**: The robot needs to explain in more detail

**2. Desire for Faster and More Efficient Interaction:**

**16**: Faster operation, whether mechanical tasks or error analysis and message generation  
**19**: More accuracy and focusing on the commands that are given. And probably providing answers to the questions that were asked  
**113**: To be quicker and upgraded  
**119**: More functional dialogue performance. Improve the operation time  
**120**: The design is good. Maybe faster performance would be nice. I didn’t read the first dialogue system though, I thought I had to press continue to start the robot  
**53**: Speed and accuracy

**3. Desire for More Human-Like, Interactive, and Collaborative Behavior:**

**18**: For the robot to be more accurate  
**110**: Instead of writing "error," write "help," and then the rest of the message. This encourages actively helping the robot instead of continuously asking it what to do  
**115**: More explanations. I would love if the robot tells me what it will do before picking something up  
**116**: The robot shouldn't throw the cube, just put it gently  
**117**: I'd like it to be more elaborate from the first error notice  
**54**: The wording of the questionnaire is "too dramatic" and not clear enough

**4. General Remarks / Isolated or Neutral Responses:**

**11**: I don't know  
**12**: Don't know  
**112**: Sterile conditions for the experiment  
**118**: Improve its response

**Group 2:**

**1. Desire for More Detailed and Clear Error Explanations:**

**22**: Being more specific when explaining the problems  
**23**: That it would tell me what the problem is after the first time asking  
**27**: More details about the errors from the start  
**29**: Basing the robot on an artificial learning instrument may help the robot's builders explain what the malfunction is whenever it occurs  
**210**: In dialogue 2, the robot needs to explain its error  
**216**: The tab that opened had an error that was hard to observe on the screen. Maybe you should highlight the error a little better  
**217**: Be more specific  
**218**: Elaboration in the description of the error—more details regarding the terms  
**219**: More elaboration regarding the robot's errors  
**220**: More information about the problems  
**64**: More information in the beginning  
**65**: Better explanation on how the robot works and gets input  
**66**: More detail

**2. Desire for Faster and More Efficient Interaction:**

**213**: The dialog box isn’t quick enough. I would have liked that the robot immediately says what I can do to help it  
**214**: Faster and clearer

**3. Desire for More Human-Like, Interactive, and Collaborative Behavior:**

**28**: If the robot asks for help, I expect it to actually listen  
**25**: I think it should speak in clear human terms and say exactly what is needed, not just spit out an error like a computer

**4. General Remarks / Isolated or Neutral Responses**

**21**: To make the square of the cubes bigger  
**24**: None  
**211**: No  
**212**: No  
**215**: The second was not clear. There was a problem, and then it worked, and I didn’t do anything  
**61**: Reprogram it  
**62**: Place everything in the center before lifting  
**63**: No

**Group 3:**

**1. Desire for More Detailed and Clear Error Explanations**

**32**: More detailed explanations  
**35**: I needed a little more explanation to communicate with it  
**37**: More information on each error and how to solve it, like in the second phase  
**39**: A variety of the errors that can happen and what to do, so I can act when it happens according to the error I meet, and the robot will show  
**313**: The error message is not sufficient enough. The explanation I got isn't detailed (e.g., which cube the robot needs help with). Moreover, in my opinion, the error message should already include as much detail as possible (as long as it's coherent to the human supervisor), so I don't need to ask for more detail unless necessary  
**318**: More detailed explanation  
**319**: That the robot will be able to deal with errors  
**320**: More explicit information about the problem and how the robot works so we can make more collaborative interactions  
**72**: Explain more in the second dialog  
**73**: Explain the problem more  
**76**: Explain in more detail

**2. Desire for Faster and More Efficient Interaction**

**31**: The robot can provide more explanation about the error in the first one. Also, if the robot can work faster, it would be nice

**3. Desire for More Human-Like, Interactive, and Collaborative Behavior**

**33**: I want the dialogue to explain better what the robot needs me to do to help it, and what it is actually doing. Also, I'd like it to explain in a more human way, instead of a machine output, which is more suitable for engineers  
**36**: Increase the vocabulary of the robot. Try to make communication swifter by letting a larger word/command pool  
**38**: How to help it  
**315**: To put pictures on the screen of what I need to do. To explain every step separately  
**316**: Understanding the slang of the user could improve the robot's response to their questions  
**317**: I want the robot to explain why it wasn't able to put the box on the shelf

**4. General Remarks / Isolated or Neutral Responses**

**34**: Null  
**310**: I would like the robot to be in a nicer color, which would make it a much more pleasant experience  
**311**: I would like to see a UI change  
**312**: The language of the robot is not natural  
**314**: No  
**71**: No  
**74**: No  
**75**: No, it was good

**Group 4 :**

**1. Desire for More Detailed and Clear Error Explanations**

**42**: The error messages should be more detailed  
**43**: More specific  
**44**: I want the robot to tell me exactly what it wants me to do to solve its problem  
**45**: Need to explain more in the second dialogue  
**48**: Make the error note more suitable  
**49**: Further explanation of the robot in order to explain what to do so that the task will be completed  
**415**: More detailed information about the needed task  
**416**: I will make the explanation more informative  
**420**: More detailed instructions when an error occurs  
**81**: Explain what the problem is in more detail  
**82**: In #2, there was no way for the operator to know which cube was the correct one to put in the frame

**2. Desire for Faster and More Efficient Interaction**

**417**: Faster performance between picking cubes

**3. Desire for More Human-Like, Interactive, and Collaborative Behavior**

**411**: Must be able to answer questions generated by the operator and not only two given questions  
**412**: Not having to type my answers but choosing from a list  
**414**: Use the first dialogue but a little bit summarized

**4. General Remarks / Isolated or Neutral Responses**

**41**: 1  
**46**: No  
**47**: No  
**410**: No  
**413**: Consistency  
**418**: Improved language. A detailed explanation is too complicated for the user, and the short explanation did not provide the action to take in order to solve the error that the robot has encountered. One sentence for the error code and one sentence to explain how to fix it  
**83**: No  
**84**: No  
**85**: Did not explain