Numbers comparison game

New Mansoura university

Nao project 2023/2024

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Abstract:

This paper presents the development and evaluation of a simple interactive number guessing game for the Nao robot. involves Nao randomly selecting a number between 0 and 10. The user then has three attempts to guess the correct number. And we use choregraphe and python for this project. Nao provides feedback after each attempt, telling whether the guessed number is higher or lower than the target. Upon successful guessing, Nao celebrates with the user, creating a positive and engaging experience. This project aims to explore the potential of social robots in educational settings, particularly for fostering basic numeracy skills and enhancing social interaction through the playing process. The paper details the game's implementation, including the use of Nao's speech recognition, movement, and expression capabilities. We further discuss initial user.

The related works:

1-*Wang-Liu*

2023

Research on Target Detection Algorithm Based on NAO Robot

2023 IEEE International Conference on Image Processing and Computer Applications (ICIPCA)

With the rapid development of humanoid robots in recent years, people are paying more and more attention to robot competitions. NAO robot, as a competition robot designated by the RoboCup standard platform group of the Robot World Cup, is deeply loved by scholars. NAO robots need to accurately detect and identify objects before they can track and grasp. Due to the limitations of related hardware, the detection results of NAO robots are greatly affected by the color difference between the object color and the background color, especially the light intensity of the environment. We study and compare the object detection algorithms based on NAO robots, and design a set of object detection algorithms based on NAO robots according to their hardware conditions. By designing a pre-processing scheme for images, the recognition of objects in images was improved, and the detection ability of NAO robots was improved.

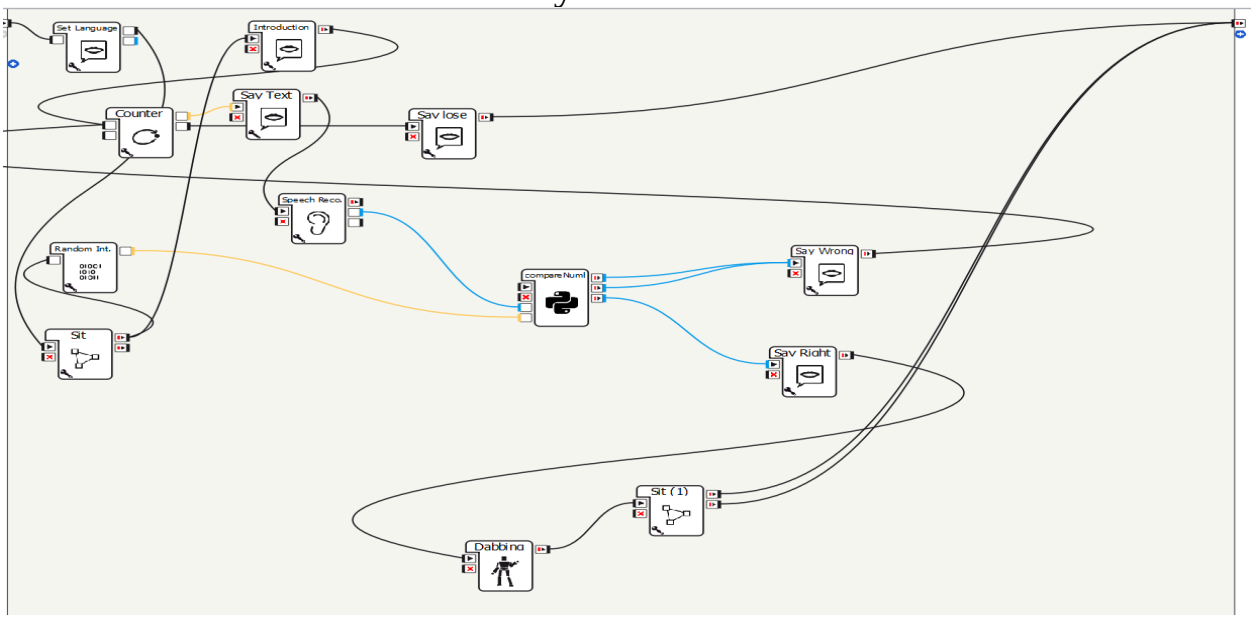
2- *Li-Liu*
2023
Research on Path Planning Based on NAO Robot
2023 IEEE International Conference on Image Processing and Computer Applications (ICIPCA)
With the great progress made in the study of robots, the path planning of robots in research has become an important problem. The goal is for NAO to walk smoothly and plan suitable routes to complete the tasks given to it by people. The ant colony algorithm and genetic algorithm were used, and the environment was constructed by the raster method, and the feasibility of the two methods was analyzed by simulation experiment using Matlab software and the optimal results were compared. The path planning experiment using the NAO bipedal robot first makes a simple arrangement of the surrounding environment where the robot is walking, and uses choregraphe software to connect to the

NAO robot and control NAO to complete the return path planning experiment.

Methodology:

We use in this project:

- **Speech Recognition:** To receive the user's input as a spoken number.
- **Random int :** To make the robot choose random number between 0-10.
- **Animation :** To celebrate with you when you guessing the right number.
- **Python code :**This code represents a simple implementation of a number guessing game on a Nao robot. The code takes the user's input, compares it to the robot's randomly chosen number, provides feedback based on the comparison, and allows the robot to celebrate with the user when they win.



Conclusion:

This paper presented the development and implementation of a simple yet engaging number guessing game, using the Nao robot. The game effectively uses Nao's capabilities in speech recognition, speech synthesis, and movement to provide a playful and interactive learning experience for users. By combining a basic numeracy task with social interaction and personalized feedback, the game fosters a positive and engaging environment for learning basic mathematical concepts. Initial user feedback suggests that the game is enjoyable and encourages active participation, understanding the potential of social robots in enhancing educational engagement. Future work will focus on expanding the game's complexity and incorporating more advanced learning elements. This could include increasing the range of numbers, introducing different difficulty levels, or integrating visual aids to enhance the learning experience. Additionally, exploring the use of the game in educational settings and evaluating its impact on students' numeracy skills will be a key focus. Overall, this project highlights the promising potential of social robots like Nao in creating interactive and engaging learning experiences. The simple number guessing game serves as a starting point for developing more complicated educational applications.

References:

1- https://www.youtube.com/watch?v=fT8rNQEs-_w
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3- https://www.youtube.com/watch?v=0J5TA_ao6Rc&list=PLma9tC7VHPpi8Bz4i2P5FuMlfMhjZ3nJ-&index=4
4- https://www.youtube.com/watch?v=9l9n6z1YcOs&list=PLma9tC7VHPpi8Bz4i2P5FuMlfMhjZ3nJ-&index=6