CHOOSE INSTRUMENTS

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TASK DESCRIPTION

- <u>Title:</u>
  Development of auxiliary tools for people with special needs using novel interfaces technologies based on gestures, handwriting and speech recognition and language understanding algorithms.

- <u>Description:</u>
  The students will design and develop new applications based on the technologies introduced in the course and considering the special needs context. The technologies will be based on the Kinect sensor and will include:

  - ❖ Gesture recognition
  - ❖ Speech recognition
  - ❖ (hand)written text recognition
  - ❖ Language understanding

IDEAS OF GROUP

- Application for drawing shapes like circles, triangles, rectangles...

- Hammer mouse game – moving the hand to

    where the mouse appears to hit it

- Application which play sound

- Application for solving maze, showing the way to go home

- Application which teach children which instruments will

    be used to eat with specific dishes

IDEAS EXPLANATION

- **Focus group**

  Children that have difficult disabilities with motoric and underdeveloped mental capacity, specially those children with problems to remember the common everyday tasks
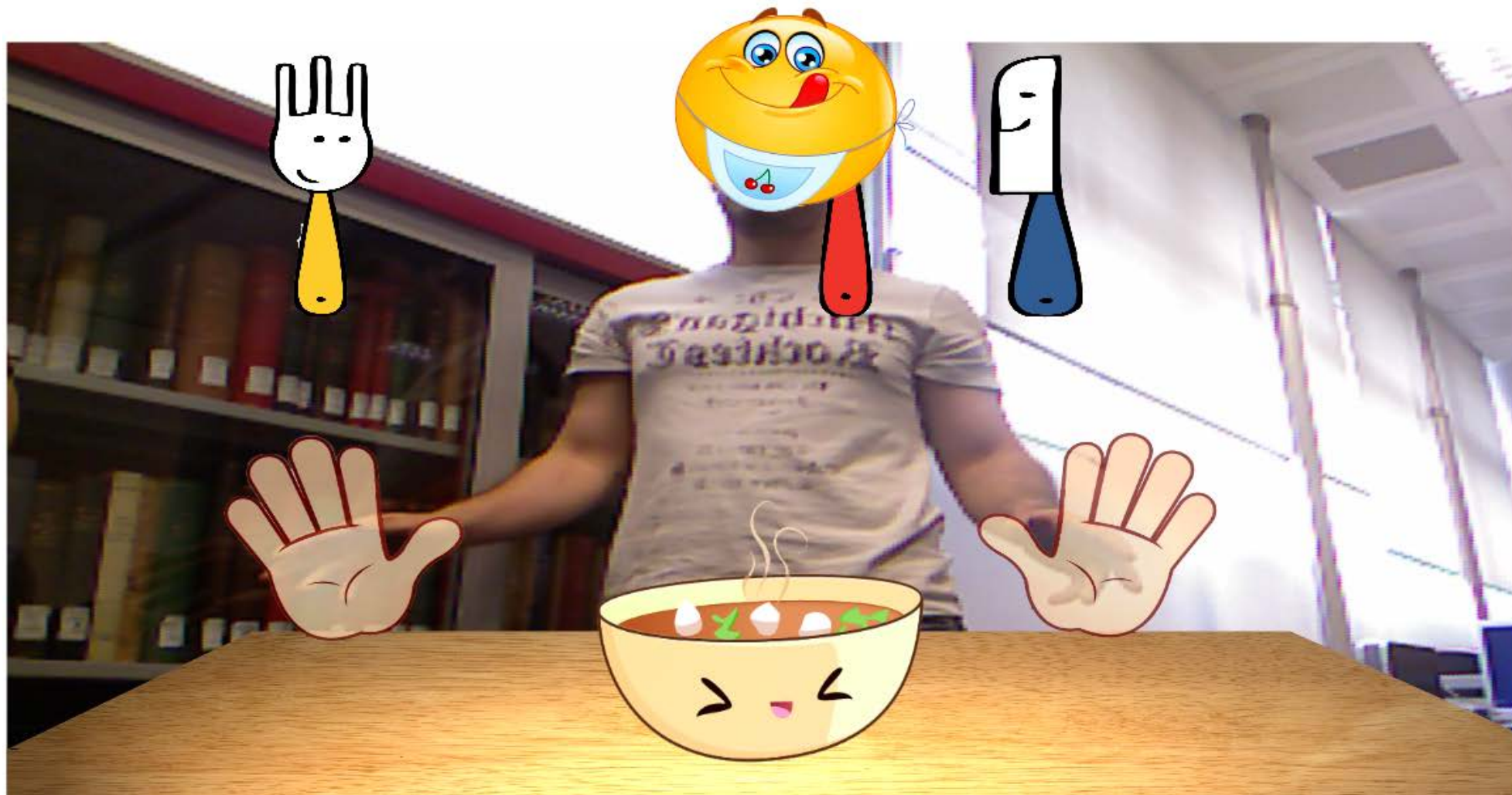
- **Purpose and motivation**

  Teach them which instruments will be used to eat with specific dishes so that they can learn the routine and don't need to be explained every time.

- **Technologies and architecture applied**

  - Kinect

  - Program C#

  - Gesture recognition

  - Photoshop

IDEAS EXPLANATION

SUBTASKS

- Create UI
- Code for:
    - Connecting with Kinect
    - Selecting and unselecting instruments
    - Checking position of instruments
    - Checking the instrument is correct or not
    - Changing dishes

DIFFICULTIES & SOLUTION

- **How to unselect the instrument?**

  Solution: *Calculate the distance from the hand to the shoulder center*

- **How to check position of the instrument?**

  Solution: *investigate about the "Canvas" class, and create function to check if the instrument for the dishes are correct every time*

- **How to change the dishes?**

  Solution: *When the correct combination of instruments is within the dish area, we load a new image to substitute the source of the dish*

- **How to check the instrument?**

  Solution: create a function which takes as parameters which instruments should be used and checks if they are correct

EXTENSION

- Function when the user chooses the wrong instrument
- How to use
- Another field:

  choose the tools in bathroom

  choose the clothes in the specific weather

DEMONSTRATION

QUESTION?

THANK YOU FOR ATTENTION!