ROMA TRE
UNIVERSITÀ DEGLI STUDI

MOVE ALONG

TrabHCI

Lifelong Learning Programme

Technologies to Reduce the Access Barrier in Human Computer Interaction

Erasmus Intensive Programme

2012-1-FI1-ERA10-09684

Rome, Italy, 5.5. - 17.5.2013

GROUP 2

Jose Luis Adelantado (UPV)

Riccardo Buccioli (ROMA TRE)

Monica Emerson (EINA UNIZAR)

Mirko Vogt (HTW DRESDEN)

David Cashman (LAMK)

http://www.trabhci.eu/

Task

Design application to help disabled or handicaped people

Initial ideas

- Piano playing for finger rehabilitation
- Learning to stand straight via interactive guidance
- Games for precision training

Games for precision training

- Focus Group

  People with movement impairment.

  Rehabilitation or disfunctions (for example, due to cerebelo problems)

- Purpose and Motivation

  Improve precision in upper limb mobility

Games for precision training

- Functionalities

  Increasing difficulty levels for two different games.

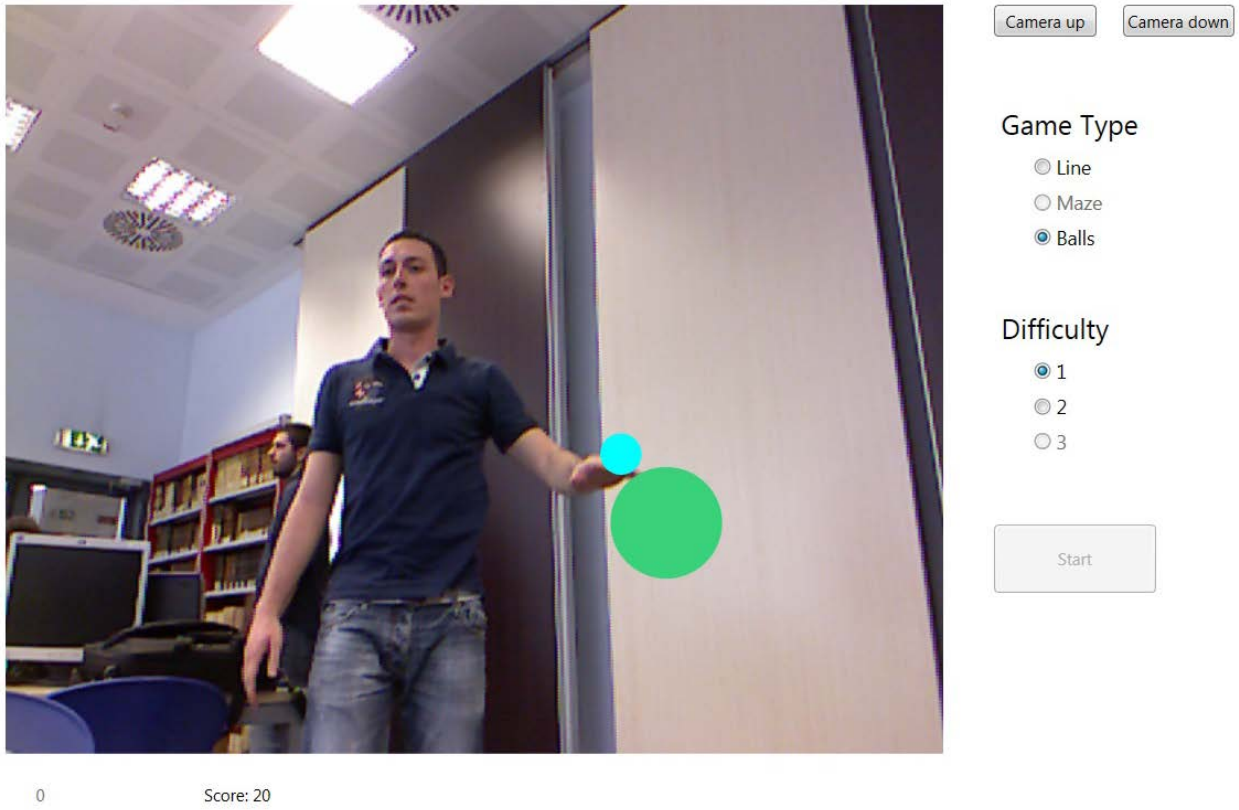
  A. *Ball Game.* Catch the different colour and size balls as faster as you can

  B. *Line Game.* Follow the lines as close as possible

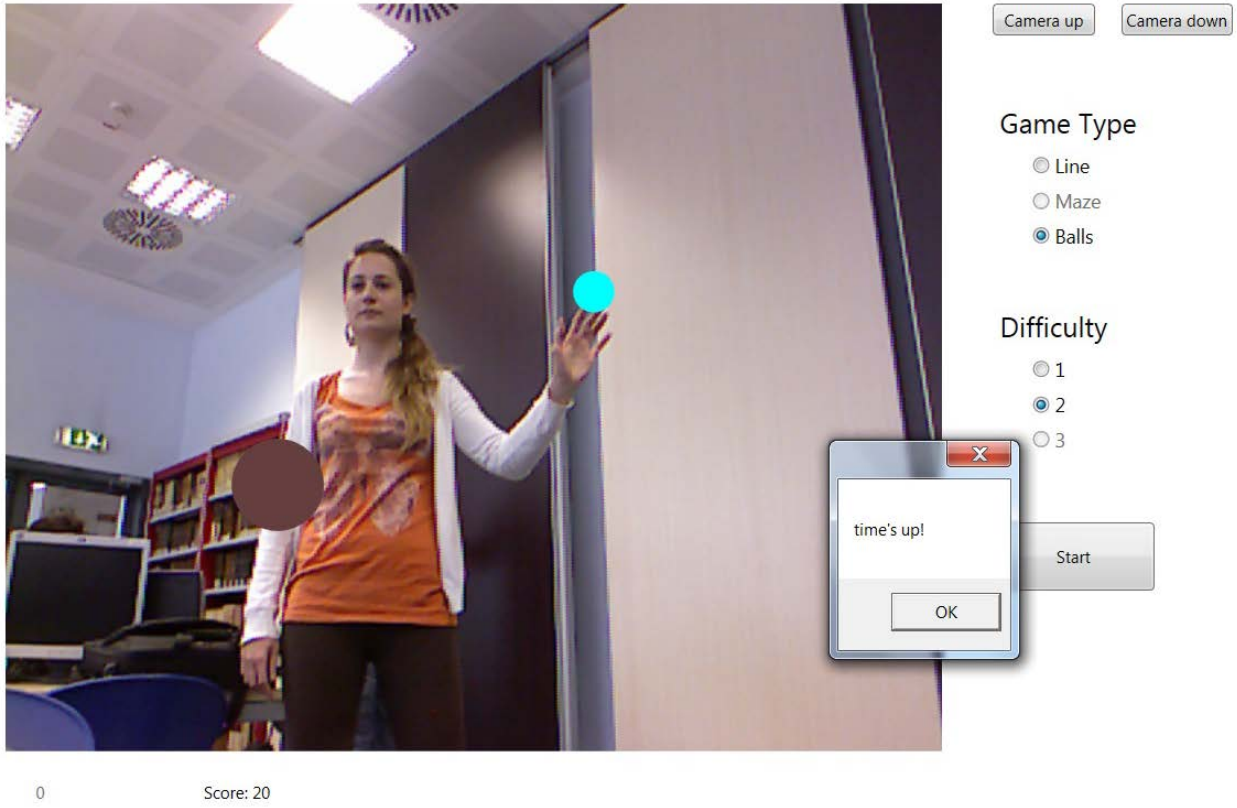
- Technologies and Architechture Applied

  Kinect and Visual Studio (C#) for gesture recognition

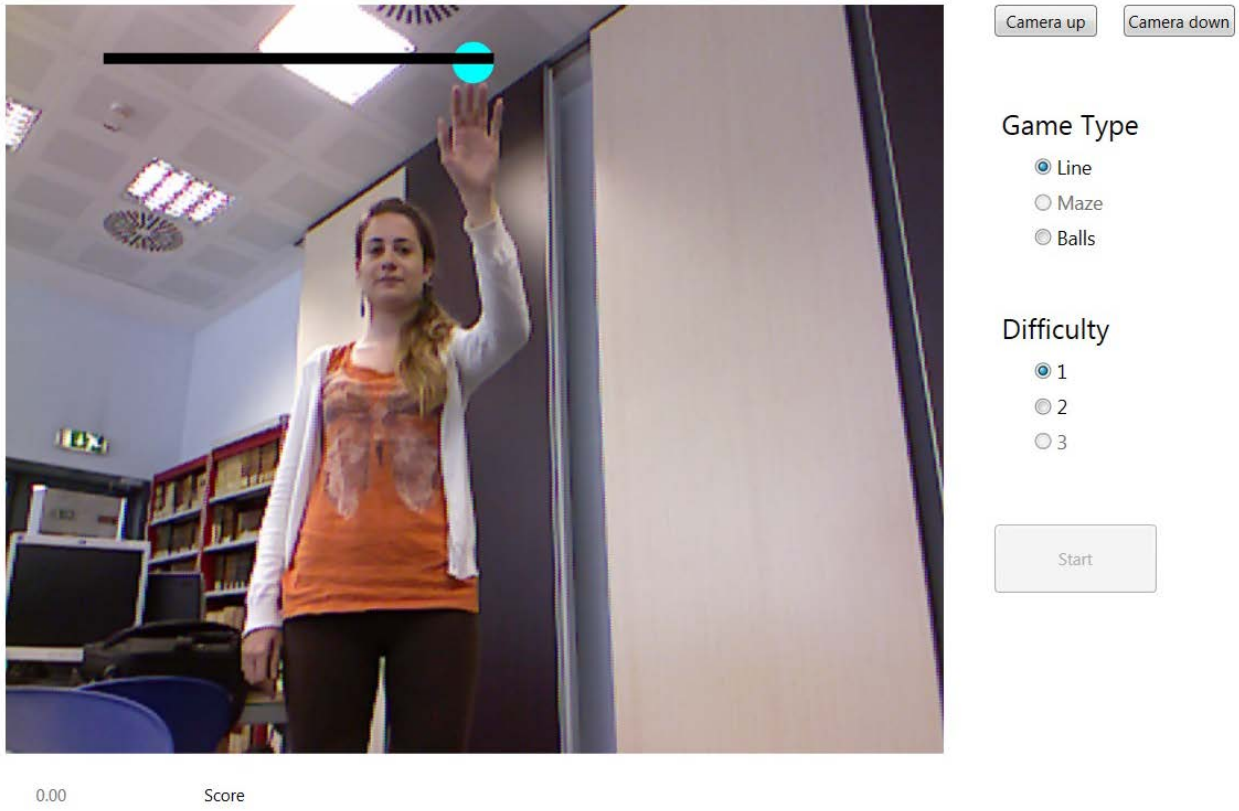
A. Ball Game Level 1



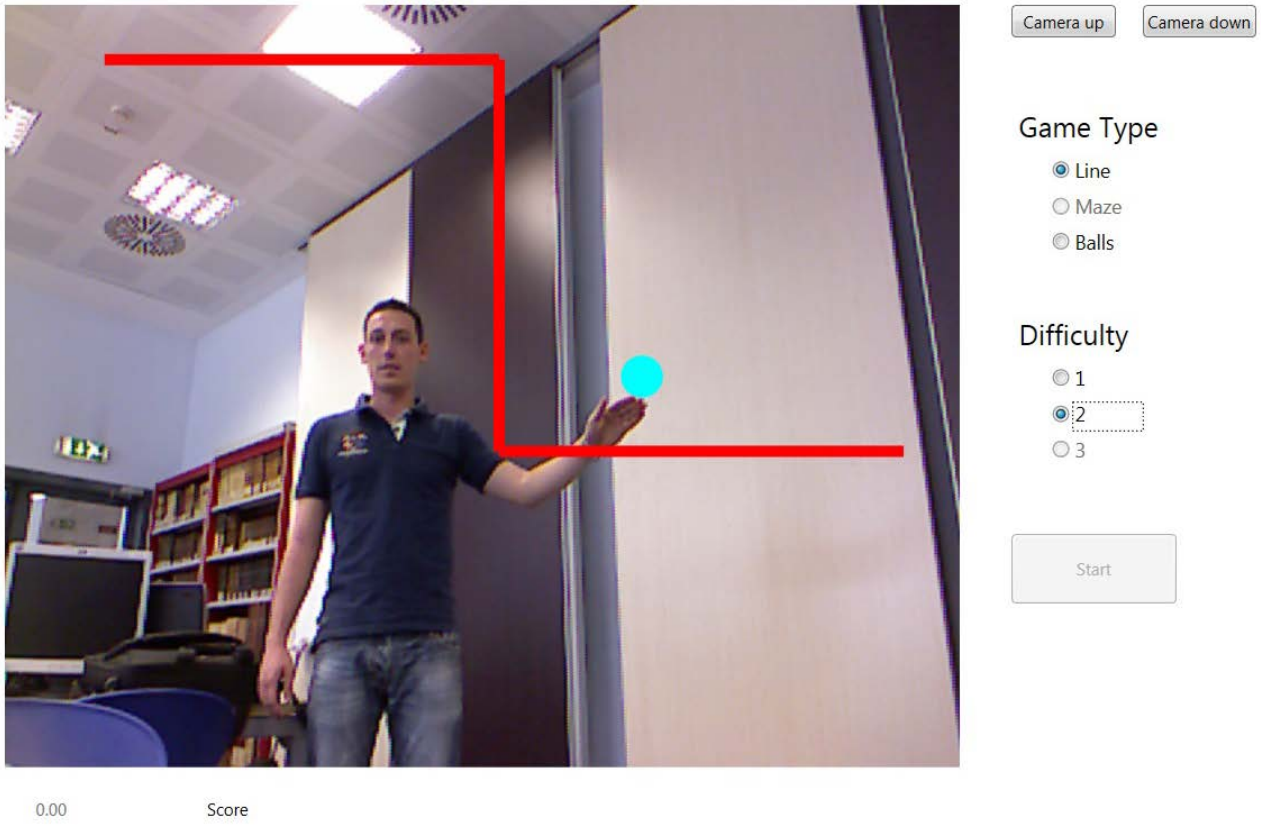
A. Ball Game Level 2



B. Line Game Level 1



B. Line Game Level 2



Work process

- Subtasks
  1. Hand tracking
  2. Random sized and coloured balls to be placed randomly on the screen
  3. Functions to verify that you catch the ball
  4. Creation of arbitrary length lines to be followed, as well as mazes
  5. Designing functions for calculating distance from hand to lines, in order to add threshold
  6. Generating score for ball game, depending on number of balls caught in a certain time

Work process

- Work split and collaboration

  Started all together at first.

  Then, divided work.

  Riccardo and Monica design lines, mazes, threshold and distances functions. Presentation designing.

  Mirko, Jose Luis and David improved hand tracking and made ball games. Integrated line and maze games.

Work process

- Difficulties met during the work

A. Changing coordinates. Solved it via being persistent

B. Missplacement of line code (lost it). Recovered from changes in maze

C. Other minor difficulties, such as blue screen.

Work process

- What was learned
  - Team working skills
  - For those who did not know C#, learnt this language
  - Advanced users of C#, learnt canvas management

Work process

- What was left not done
  - Third levels of the games
  - Mazes

Work process

- Ideas of how to proceed and extend the project
  - Finish what was left not done
  - Add some voice recognition and computer synthesising voice
  - Include ther other hand and other similar games for lower limbs

Work process

- Where we succeed and why

  Several games and levels working. This meant we got everything working at some level.

Work process

- Where we fail and why

We would have liked to do maze and more levels for every game.

We were not able because of the lack of time.