



prof. OLOV ENGWALL

E D U C A T O R

HEART Project

(Help educators to teach through robotic tools)

no. 2021-1-PL01-KA220-ADU-000035164

Database and Guide on Educational Robotics

WWW.HEARTROBOTICSPROJECT.EU

- **Please, introduce yourself**

I am a professor in speech communication at KTH Royal Institute of Technology in Stockholm.

I have a master of science in engineering and my doctora was in speed production and in speech synthesis. Then I worked with a computer animated pronunciation teacher, in order to teach pronunciation. The program was analyzing the pronunciation and then was producing a feedback about what the learner could do to achieve better results. Fianally, I started moving more to language learning assisted by technology.

- **Describe your work regarding robotics in the adult education.**

15 years ago I and my colleagues started a project in which we tried to merge robotics with computer animation. The result of these efforts was the development of a robot which is a physical robot that has a 3D printed face mask and then computer animations are back projected to that face mask. The projector is located inside the mask. The robot is called the Furhat. The benefit of having this computer animation on a mechatronic robot is that you can have many more facial expressions and different personalities.

A lot of people started using this robot for different projects like medical applications as screening, as a companion for elderly people or as an information application/helper in different settings.

We are using it to learners that want to practice in a second language. In general there are a few studies with adults and robots. When it comes to language learning there are loads of research done with children or adolescences but with adults it's quite rare. We are working exclusively with adults in settings like language cafè, where they can have a small talk with the robot. Furthermore we have programmed the robot so it can play the Taboo game with the learners. There is one robot and two learners. The learners are describing the word to the robot and then it tries to understand which word has been described. Of course the system provides these words so the robot already knows it but it takes some time and efforts to give the correct answer, so the learners could practice on speaking.

We are working in a direction where the robot can control the interaction between the participants. For example if one of the participants is dominant in the game we try to figure out if the robot can do anything so the other participant can talk more.



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- **This robot is it for the public?**

Yes, now there is a separate company that sells the robots to anyone who is interested.

- **Did you train some instructors to do these learning activities or you referred directly to the trainees?**

We were interacting directly with the trainees. The language cafes were taken place in a language school where we discussed with the teachers but they were not involved in the actual activity. They were involved in the background information so we could design the interaction properly.

- **Did your trainees face any difficulties with the whole project?**

Absolutely. It depends very much on the participant. It depends on their language level and also their personality. Some of them liked it better interacting with the robot than with a fellow student because with the robot they were not afraid in making any mistakes. But others were having difficulties in understanding the robot or finding the interaction with a robot awkward.

- **In your opinion was this experiment an overall success?**

It was for sure successful but we have done only short terms studies meaning that the trainees were interacting with the robot for about half an hour. We haven't been able to do studies with people that were interacting with the robot for several months. But the initial reactions were very positive, so it has potential.



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- **What skills do you believe your trainees obtain?**

The goal was the learners to practice the language and not just a specific vocabulary and that opportunity – to talk and to practice– was given to them. Because of the short interaction we could not see if there was going to be a significant improvement into their language learning skills but for sure we can say that there was a positive step into practicing social interaction, with the robot and the other learner. The robot was observing the interaction and tried to moderate the conversation so the interaction was equal for both parts. It is possible if you practice for a longer time with the robot to develop better communication skills.

- **Is your project suitable for a non- expert audience?**

The company is selling the robots and they offer some pre-defined programs so the robot can interact. They have developed a programming interface which should be rather easily accessible even if someone is not a programming expert. But you do need to have some programming skills so maybe it's not for the ordinary teacher to develop their one lesson. And finally the robot is quite expensive.

- **You referred at the begging of this interview that the robot was helping elderly people. Is this project still on?**

Yes, I think it has just finished. The robot is been used as a companion but also for screening. So in collaboration with medical doctors the robot is testing the human through a series of questions to understand if a disease like Alzheimer has started to develop.

- **What are the next steps for you?**

At the moment we are exploring on how to adapt the robot with different types of students and in particular with different types of cultures. The goal is to make the robot suitable for different kind of students, so it will not talk and work the same way with different persons.

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 **Furhat Robotics**



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