

Computer Training System for TRIP without VISION

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"The only thing worse than being blind is having sight and no vision."

Helen Keller

Among different forms of disabilities, disability in vision can be characterized by extremely serious consequences as a result. Vision provides a person with 90 % of information. A blind person is deprived not only from a possibility to perceive the information, s/he is also deprived from a possibility to move independently in the modern city, to use transport and that is why s/he suffers from "hunger in communication" and "hunger in information" as well.

The invention of a speech synthesizer has performed a kind of revolution in a sphere of rehabilitation of visually-impaired and their joining a group of adequate healthy people. A completely blind person, thankfully to a speech synthesizer, has received an opportunity to perceive the whole world and to influence on it not through his/her spectacles, but through a computer, to work in the world of computer information hand in hand with people capable of seeing.

Problem:

It is necessary to organize computer (IT) and psychological support for transport moving of a visually-impaired individual according to the route planned in connection with scientific and industrial reasons. There is a necessity to take into consideration various categories of the blind people-participants of the transfers, the causes of their moving, the groups of the routes of these trips and journeys. That is why, in order to achieve these goals it is necessary to have available **speech synthesizers** in English and in the language of that country from which a visually-impaired individual arrives + in the language of that country where s/he is going to. Thus the visually-impaired will be able to follow the map of the route of their trips and to get accustomed to the future transfers gradually.

Nowadays special programs for the people without problems in vision are being launched in the way of such called **3D-excursions**. And, by analogy, we suppose to create an opportunity for the people with disabilities in vision to travel within our database in the **interactive mode**.

Goal: Navigation (both computer and psychological) assistance & support for blind and visually-impaired people in scientific-and-educational trips around Europe.

Methods:

* development of speech synthesizers in English and in the language of Italy, Greece, Latvia, Belarus + in the language of that country where an individual with disability in vision is going to;

* ICT;

* psychological questionnaires, tests, computer psychological techniques, psycho-diagnostic procedures on express-evaluation of personal characteristics of the visually-impaired individuals etc;

* cooperation with ICCHP and ICEVI in Europe on the technical moments.

4 (four) groups of specialists involved in the project

1. «Motive» Specialists Group (Latvia & Belarus / BSPU)

Tasks / objectives:

* studying of professional motives for moving;

* categorization of people's professional competence before a trip;

(the trips are performed from developing countries: Belarus, Latvia etc. to such developed countries as Italy, Greece, Poland etc.)

2. «Geography» Specialists Group (Greece & Belarus / UIPI)

Tasks / objectives:

* geography studying of every moving;

* categorization of the routes for moving;

* studying of technical problems and difficulties that can occur in the trip + their prevention, further troubleshooting.

3. «IT» Specialists Group (Belarus / UIPI, BSP)

Tasks / objectives:

* development of a computer database on the cities for moving;

* development of a computer database on speech synthesizers;

* IT-support for a psychologist, namely: development of psychological tests and questionnaires, their sorting in databases;

4. «Guide» Specialists Group (Italy & Belarus / UIPI, BSP)

Tasks / objectives:

* studying of blind and visually-impaired people's psychology;

* psychological support of such people at different stages of moving.

5. What is a motive as we understand it?

Explanation: there's a map of taxi and bus routes in Pavia.

1. A person as got a motive to get from point A to point B. He addresses your system to a) get a recommendation which route to take, b) to get a recommendation during the ride how to proceed, being in point D.

2. So, a motive is a person's wish or will to act this or that way. Where does it come from? Your system doesn't answer this question today. It's the sphere of psychology. Any psychological motive (drive) is difficult to make out and you are right to have avoided it.

3. Your system functions well until motives, typical for a human being, are not joined with non typical motives and desires. Your system doesn't need us for some time but...

6. The first argument in favor of our system

Your system might become more effective, if a module, differentiating any change of a typical motive for a non typical one is inserted into it. What is meant here? While driving a person might have some ideas he (she) had not thought of before and change the route, cancel the ride or come back. In other words his plans might need correction. We offer a module, which will reserve well in advance the data about peculiar habits of a definite person. Thanks to the module your system will know how to reconstruct the route even in rare problematic cases when the person suddenly generates unexpected new motives. (If our module doesn't identify these unexpected motives, it will only interfere with the work of your system).

What are these unexpected motives? They are connected with not all human behavior, but with haer psychology motives.

- the person remembers having left smth at home
- the person remembers having left something a strange place
- the person encounters some unforeseen event on the route and makes up his mind:
 - to stop moving for a while
 - to cancel advancement
 - to start a new route
- his mood makes him change the route
- a telephone call urged him to...
- the person guessed that...

4. Solution: most psychologists think this kind of motive cannot be identified as these motives are not typical (irregular) and cannot be foreseen.

. Why then has **Google been saving data about their clients recently**? The data concerning the site he attends, the time of addressing, the site he (she) doesn't attend?

. It means that having statistical data about a client it's possible though with difficulty to recognize text motives of a definite person. They are subjected to regulativity.

Why can't the Google idea be transferred to the "route" motives? Can't your system save data of a definite person's regular stops, returns, cancellations? Statistical data about a person's behavior on the route, his ride timing – is good information for disclosing the client's habits, his "primitive " motives, for attempting to find regularity of an unexpected motive on a definite point of the route. It often is some association, very personal but recurrent.

Conclusion 1. If there are no planning errors on the route, the problem of the motive recognition doesn't exist. If such errors exist, the problem should be solved.

7. The second argument in favor of our system is the blind people

4.1. When there's a blind person on the route – he (she) deals with a city map or a route map which he has formed in his head. A PERSON WHO CAN SEE, doesn't need to remember the map. But a blind person has to form an image of a city plan, an image of his yard territory, an image of his room plan, an image of his working desk. That's why blind people ask those who can see not to change the order of things in their surrounding. A person who can see, doesn't care much about it.

4.2. We suggest for the blind who will use your system to work out a simulator, helping to form an image of a city map in a blind person's mind. Via a speech synthesizer.

4.3. Our work experience with blind people helped work out two specific methods of teaching the blind. We use in teaching Multidimensional Scaling method.

All the ideas, suited for people who can see, can be applied for blind people too. But some limitations are needed. When an image of a city map has been formed in a blind person's mind, we offer a second simulator – a kind of preliminary preparation for a ride. It might be a virtual following some route simulator – from the university to the library, to the conference hall, to a workshop, to the exhibition etc.

Conclusion 2. It's easier to recognize motives of a blind person.

We offer therefore to let our group from Minsk to concentrate first on recognition of blind people's motives. They will be "IT" instruments, recognition modules, oral speech synthesizers.

Conclusion 3. As your system has been tested in Boston USA, we happened to know of a school for blind people. It's a kind of a town for the blind near Boston – Perkins School. Let's start with creating for these blind people in Boston of a kind of a system of scientific, educational and cultural trips within the district of Boston.

8. Summary results

- * Development of speech synthesizers in Russian, Belarusian, Italian, Latvian, Greek and English;
- * Development and approval of databases on:
 - geography of the routes for moving,
 - moving causes of industrial and scientific type,
 - the psychological tests and questionnaires for individuals with disability in vision;
 - psychological characteristics of the visually-impaired people,
- * Providing the visually-impaired individuals with Computer/ IT & Psychological support in trips;