THE PROGRESS OF BULGARIAN TEAM IN EUROPEAN EDUCATIONAL PROJECT "MULTILANGUAGE VIRTUAL STIMULATED PATIENT"

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ABSTRACT

Multilaguage Virtual Stimulated Patient is a computational system that behaves and responds as would a real patient during an interview with his or her doctor in Bulagaria.
The tutor can choose between various "base patients" and modify them adding one or more illnesses. Once defined, the VSP modifies their answers according to their cultural level, emotional state, psychological profile as well as the ongoing situation of the interview.
Conclusions: The Multilingual Virtual Simulated Patient (MVSP) Project is aimed at the generation of a MVSP that can interact with a healthcare professional in 7 languages and that also incorporates the cultural differences of the native speakers in these countries realistically simulating the linguistic and cultural differences that make up the social fabric of each country. The project also aims to create a second model of the virtual person that would represent a minority immigrant population of each country. This model will incorporate all the appropriate ethnic cultural responses expected from a real non-native patient.

Key words: Multilanguage, Virtual, Patient, Symptoms, Locations,Properties, Phrases, Paragraphs

INTRODUCTION

MVSP is a computational system that behaves and responds as a real patient would during an interview with his or her doctor. Replying to questions about symptoms and illnesses etc., the simulator provides additional support to healthcare professional training in the same way as the actors usually employed as simulated patients. The tutor can choose between various "base patients" and modify them adding one or more illnesses. Once defined, the VSPs modify their answers according to their cultural level, emotional state, psychological profile as well as the development of the interview, developed in seven languages: English, Spanish, Italian,

Portuguese, German, Hungarian and Bulgarian. The interaction with the "digital person" is done through computer generated 3D image synthesis, and the generation and synthesis of the natural language.

AIMS:

1) to elaborate a MVSP that can interact with healthcare professionals in 7 languages.

2) language versions are being adapted to produce so-called 'non-native' versions, i.e. virtual patients that speak like a member from an ethnic minority in the respective country, e.g. a Turkish patient speaking in Bulgarian at a Bulgarian clinic.

3) for the piloting phase will be to simultaneously validate the functioning of each of the multilingual VSPs in a real-life environment, as well as to serve as a mechanism to promote and prove the benefits of the use of VSPs in real life training environments.

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Figure 1. Example of the data-collection tool for the Question Comprehension Module. This interface is used to enter the syntaxes and ontologies necessary for the VSP to understand language, in a way to allow the program to convert it to computer-readable language.

Bulgarian partner have worked hard and almost finish the second part of the project "CITIC TOOLS" The main objective of the question comprehension module is, as already said, identifying keywords in a question. These keywords are words that refer to a particular symptom, a symptom at a given location, a greeting, a farewell, or words that relate to a question property, the intensity of a symptom, the frequency of symptoms or their duration. Aim of this tool is to create a dictionary with with all the keywords that can be used in a question in natural language. This is why we have insist on the fact of thinking a question using all possible ways, depending on how the question is done the keywords can vary, probably more in some languages than others. For example this happens in Bulgarian, where the keywords may change substantially depending on the way of asking. If the information you enter into the database were incomplete, then the multi virtual simulated patient would not be able to interpret certain questions. This would lead the necessity of asking the questions always in the same way, using same patterns, which would substantially reduce the operability of this project.

MAIN PURPOSES
This tab will display different types of questions and each of them will have a series of examples associated in English which must be translated by the user. These examples serve subsequently to do a small first recognition test battery.

Question Type: shows the different types of questions that may arise. Here we have tried to be as versatile as possible and to ask questions in many ways so that the conversation with the simulated patient is as real as possible. This versatility means that the amount of information that must be recognized by the simulated patient is quite extensive.

English text template: It will be an English template of the question type selected(Question Type).

Own Language Template: Here the user must write the template for the "Question Type" selected in their language. This is simply to familiarize the user with the questions possibilities.

Table 1. *Questions tab*
This tab is called "MVSP Questions Module Model".

Table 2. *Symptoms tab*

Main purposes. The purpose of this tab is to enter into the database the keywords that define the symptoms that the simulated patient may experience.

Symptom Type: It lists the two types of symptoms that we can find: "Localized" and "Non Localized.

Symptom: it lists all the symptoms that the simulated patient may experience.

Symptom Selected Keywords: It shows all the keywords they used to identify the symptom which is been asking for in a question The idea is to introduce the different verbs forms for that keyword.

 Ex. to inflame: infinitive
        inflame: present Simple
        inflamed: past participle
        inflaming: gerund

Future of the MVSP?

1. Complete the generation of the Ontology in each language and then proceed to the integration of the ontology. This last step would see the end of the technical development phase of the project, since it would lead to the creation of a patient who can express different symptoms, and explain them, using a wide range of expressions to a doctor, and who would be able to understand, respond to and answer questions posed to it by a doctor.

2. The ontology which has been used for each country will be adapted along particular cultural norms and standards, with the help of the cultural style house guide, to reflect the language and modes of speaking of a non-native speaker from each of the countries. This 'non-native ' adapatation of each of the VSPs will serve a second patient.

3) It is planned to integrate the VSP into a real training course in each of the countries for which a VSP is being produced, and to evaluate the results.of patient from, e.g. Poland, who would be visiting a doctor in e.g. Bulgaria.

4) The consortium is hoping to reach organizations that are interested or could be interested in adapting the product to specific scenarios eg. prison service/police training, service industry specific scenarios for example tele-operators in call centres, customer relations training, air attendant training etc.