Lexique LSF

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Abstract

The French Sign Language (LSF) was banned in 1880 from all teaching institutions. From then on, it continued expanding in an uncoordinated way throughout special schools. In 1991, a new French law allowed deaf people to choose a bilingual education (French and sign language), and since February 2005 each school is required to integrate every devoted child who wishes it, no matter his handicap . All public websites must also become accessible.
With this new context, the LSF grows using regional differences, and users invent new signs to translate new concepts. However, the sign language cannot count on traditional media to spread out new expressions or words, since it is nor spoken nor written. Therefore the sign vocabulary differs depending on geographical and social situations, furthermore if the concept is specific and elaborate. The website LexiqueLSF wishes to propose users a contributing and efficient tool, allowing a large diffusion of new signs and concepts.
A short analysis of the existing supports will lead us to present the main issues and to describe precisely the technical and linguistic solutions we chose, as well as some of the problems we met.
Likewise, all the elements composing the website should be considered as a concept in order to imagine complete accessibility to deaf people, and not only to blind people. We do not wish to make a simple dictionary. Our aim is to allow exchanges between users, to encourage them to invent and spread neologisms, and to make sure that the represented concepts are clear and understandable.
Publishing a new notion requires to create a number of descriptors (in French and in sign language, illustrations, examples...) and to relate this notion to others already existing (opposite or similar concepts...). Each new sign proposed will be completely described, therefore it can easily be appropriated. Thanks to this organization, the same concept can be shown in different ways depending on the role it must play in context (classification, illustration, rendering, etc.).
One of the most important design patterns is the possibility of dynamically changing the classification system. Users will be able to choose various descriptors to build a classification view.
A reliable, but not compulsory, validation system will guarantee only serious suggestions. Three steps are needed: grammatical validation, sign validation (both require experts) and community validation.
Our production is thus very different from already existing paper or digital dictionaries, containing only everyday life vocabulary and almost no definitions, nor use examples. The best ones sort words according to the space location and configuration of the sign, but do not recognise morphological variations. Let us also observe that these dictionaries are not "bilingual" since they are accessible only to French speakers.
There are two discursive enunciation strategies according to (Cuxac, 2000). Signer may choose to show without saying, or to say in showing. In the future LexiqueLSF will try to manage both of this kind of signs: standards signs from dictionary and structures having a great iconic representation from morphemic elements.

1. Context presentation

The French Sign Language (LSF) was banned in 1880 from all teaching institutions. From then on, it continued expanding in an uncoordinated way throughout special schools. In 1991, a new French law allowed deaf people to choose a bilingual education (French and sign language), and since February 2005 each school is required to integrate every devoted child who wishes it, no matter his handicap . All public websites must also become accessible.
With this new context, the LSF grows using regional differences, and users invent new signs to translate new concepts. However, the sign language cannot count on traditional media to spread out new expressions or words, since it is nor spoken nor written. Therefore the sign vocabulary differs depending on geographical and social situations, further-

more if the concept is specific and elaborate.

2. Poster's aim

The website LexiqueLSF wishes to propose users a contributing and efficient tool, allowing a large diffusion of new signs and concepts.
A short analysis of the existing supports will lead us to present the main issues and to describe precisely the technical and linguistic solutions we chose, as well as some of the problems we met. This website must absolutely have a relevant and sharp classifying system, must be accessible to everyone, and offer new entries to satisfy all users.
The poster will explain the most interesting technical aspects of our work and main models, and will introduce our approach of the sign language representation, including browsing and enounciation strategies.
We will conclude in giving some information about the future of LexiqueLSF.

3. Technical aspects

We are presenting three main aspects: the content management system, the classification system and the validating system.

3.1. Giving sense throught associations: the content management system

We needed a method providing the possibility to build a real accessible and dynamic website in French sign language.
Our solution is a different use of the same content, depending on the role it takes in context.
To achieve this goal we have to manage the associations between the content elements, possible contexts (classifiers) and descriptors for those contexts (Bénel, 2003). For example, the content "Mathematics" can play several roles: classification (it includes all other mathematical terms), concept (the concept of "mathematics" itself), illustration ("mathematics" can be used as an illustration of the "science" concept), etc.
Other important roles are antagonistic concepts, similar concepts, similar signs, descriptions, examples of use, etc.

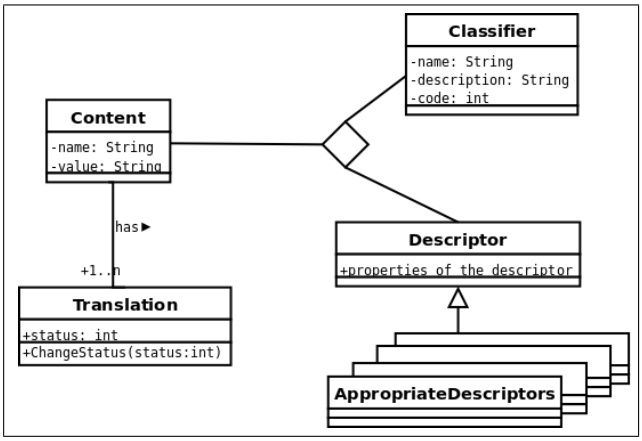

Figure 1: UML view of the data structure.

3.2. Offering several possibilities of classification

LexiqueLSF offers several possibilities of classification depending on the user's preferences, his goals or his intentions.
The main purpose is to avoid a unique classification system which cannot suit all users (for example, French lexicograhic entries will be difficult for signers) nor purposes (Bénel, 2003; Bush, 1945).
That's why classification is represented as a role for content with custom descriptors. Implementing a new classification system is very easy: you create a new classifier and add (or reuse) descriptors. Then you can link content to this new role.
You may choose to use existing classifiers as well.
The last step is to build a new view for the classification system.
Unfortunaly users cannot do this themselves. It would be interesting to add this feature in future.
We implemented only one system, for demonstration purpose, based on the Dewey's classification for library. This system is quite good for the beginning but has a lot of inconvenients and cannot remain the only way to access concepts, especially for signers.
Each content playing a Dewey's classifiers role has three descriptors: his own Dewey code, the Dewey code of his parent and his name as classifier (frequently his own name as content).
We are now implementing other classification systems based on sign configuration.

3.3. Validation and authoriting tools

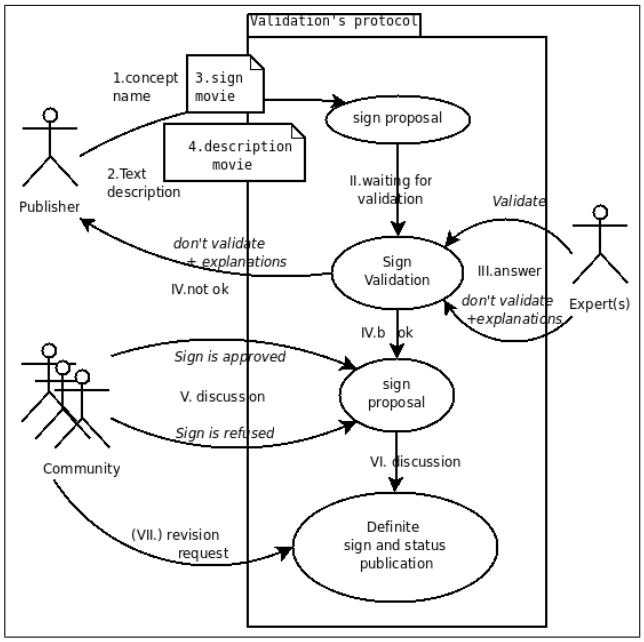

Figure 2: UML Case of utilisation: Validation system

The validation system will guarantee only serious suggestions. Three steps are needed: grammatical validation, sign validation (both require experts) and community validation.
This system improves wikipedia's one.

User's role is described in a descriptor for each classifier. Thus a user may be publisher for mathematics, expert for music and simple user for theology.
User's privileges are obtained from the existing experts/publishers.
It is explained in figure 2.

4. Future prospects

To look for the existence or/and the definition of a sign (in FSL), most solutions require to know French. No bilingual French/FSL media exist. The lexicon is always defined starting from a French word to a FSL sign, using as much as possible a conceptual link between them. This artificially freezes FSL lexicon (Cuxac, 2004).
Best attempts in resolving this problem include other starting points : configuration (Moreau et al., 2007), spacial position and moves (Stokoe et al., 2000); orientation (Battison, 1974). However facial expression (Baker and Padden, 1978) has never been used as a research criterion.
Moreover, none of these approaches consider the morphological variations of FSL signs.
According to (Cuxac, 2004), most standard FSL signs (i.e. those existing in dictionnaries) include at least one internal morphemic component. He upholds the theory that the parametric elements composing a sign, these elements having no morphemic value, have a "phonetic" function and are necessary to realize the sign in good shape.
In this paper, we argue that parameters used in FSL signs

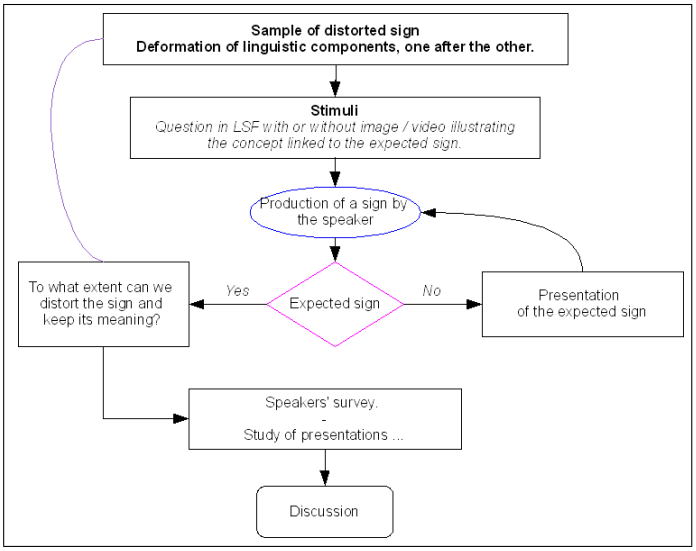

Figure 3: Questionnaire and interview protocol

are classified hierarchically. In order to test our theory, we propose a questionnaire and an interview of deaf signing speakers, as shown in figure 3.

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