

UN SISTEMA AUTOMATICO PER L'ANALISI DELLE CONNESSIONI FRA LE SORGENTI DI MEMORIA DEI SOGNI

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THE AUTOMATIC SYSTEM

An automatic system for the recognition and classification of possible links among dream sources is described. The system carries out text analysis of verbal data provided by the dreamer: this data consists of dream reports and associations.

HYPOTHESIS ABOUT DREAM SOURCES

According to a cognitive approach, the dreaming process can be described in terms of three elements [1]: an input (given by memory sources, which can be recognized by means of associations), a processor, and an output (given by the dream experience). The basic idea of our research is that the input should be viewed as consisting of closely interconnected, very far from separate, sources, and that the study of the connections among these sources is significant.

DESCRIPTION OF THE SYSTEM

The system identifies possible links among dream sources by detecting the occurrences of words that have the same stem or are semantically very close.

It includes three Access databases and a package of procedures written in Java. The databases are Dictionary (storing information about word stems, synonyms, and antonyms), Temporary, and Results. The procedures are of two classes: those having the text files as input and the Temporary database as output, and those that, through appropriate queries to the Temporary database, build the tables of the Results database.

GRAPH VISUALIZATION OF THE RESULTS

The information content of the Results database can be visualized by means of multigraphs whose nodes correspond to the sources and whose arcs correspond to the links among them. An alternate representation is given by bipartite graphs whose nodes are divided into two sets: the set of links and the set of sources. The latter set includes the report.

Recurrences involving the report define "direct" links.

Links related to more than two sources are called "pervasive".

QUANTITATIVE CHARACTERIZATION OF THE RESULTS

It is possible to characterize the properties of the links quantitatively. Simple statistical tests [2] confirm the significance of the results.

PLAUSIBLE EXPLANATIONS FOR THE LINKS AMONG DREAM SOURCES

Some of the recognized links have a correspondence in the dream report, and others have not. Among the latter ones, the automatic system identifies a number that are unexpected by both the dreamer and the analyzer. The application of heuristic rules [3] allows advancing plausible logical and emotional explanations for the links among sources.

[1] Cavallero, C. (1993), *J. Sleep Res.* 2, 13-16.

[2] Barcaro, U., Calabrese, R., Cavallero, C., Diciotti, R. & Navona, C. (2002), *Dreaming* 12, 93-107.

[3] Barcaro, U., Cavallero, C. & Navona, C. (2005), *Dreaming* 15, 271-287.