SELF ORGANIZING MAPS AS A NOVEL TOOL FOR DATA ANALYSIS IN EDUCATION

INTRODUCTION:

Young people currently live and are connected to the virtual world in a natural and simple way. Nevertheless, in spite of the great advantages of the use of Information and Communication Technology, and particularly social networks, there are several drawbacks, principally security and privacy of net users.

However, human behaviour is strongly non-linear, so usual statistical analysis does not yield accurate results. Now, machine learning algorithms are very common in solving real life non-linear problems, such as economics, medicine and engineering. So it would be worthy to apply this methodology on education data sets.

METHODS:

In this work, a non-linear, visual algorithm named Self Organizing Map (SOM) has been applied in order to extract some conclusions about related aspects mainly, to security and privacy perception of teenagers when using Virtual Social Networks. SOMs are a particular tool based on Artificial Neural Networks, and provide both a non linear approach and a visualization tool of data.

The present work proposes a study to determine and analyze the different aspects. A methodology based on a survey consisting of 27 questions has been carried out on a 170 teenagers, aged between 12 and 16 years. SOMs have been applied on variables related to Facebook privacy and security issues. Data on every variable have been mapped into a 7x12 neurons network.

RESULTS:

The results have revealed a lack of knowledge of privacy, protection mechanisms and even their own image, that Virtual Social Network implements.

CONCLUSIONS:

A lack of awareness and sensibility about the problems that a thoughtless use of these social networks can cause has been detected. In other way, this work also has proved that SOM is a valuable, interesting tool to infer knowledge from non-linear data and a different proposal from the classical linear statistical methods.

KEYWORDS: SOM, data mining, social networks, privacy and teenagers.