

A “three-dimensional translation” of the World City project

VALENTINA BOVA*

ABSTRACT: The task of this work is to transform unidimensional data, in the way of textual spatial information, into a three-dimensional virtual representation. Furthermore, the connected purpose is to disclose the knowledge of a masterpiece appertaining to cultural and architectural heritage: the “World City” project. We employ a self-made system to analyse the text and to extract specific sentences from it and a computer graphic software to visualize a scene in a virtual environment. The methodology employs a set of rules that analyse the annotated text and create a link between the linguistic elements and the three-dimensional entities that will compose the virtual scene. The work ends with an example: an original sentence and the corresponding 3D scene generated by the system is illustrated.

Keywords: Text Analysis, Sentences Extraction, Text-to-Scene Conversion, 3D scene, “World City” project..

1. Introduction

The fastest and easiest way to transmit information to people is to employ visual images or, even better, three-dimensional representations. However, creating 3D scenes is a difficult and time-consuming process because it involves the use of complex software, full of commands and parameters. A new solution could be the creation of systems able to generate 3D scenes directly from natural language in order to avoid the need to model virtual artefacts and to create their own virtual scenes. The system should be able to read a sentence, to interpret human language and to map some words or expressions to three-dimensional objects. The main challenge is that natural language has a very complex structure and it is full of ambiguity; in common speech, in fact, people usually do not mention many details about the space and the objects involved because they are not generally the focus of the conversation. For example, when we say that the car is parked alongside a building, we suppose that the listener already images that the

* Dipartimento di Ingegneria Informatica, Modellistica, Elettronica e Sistemistica, Università della Calabria, Rende (cs), Italy.
valentina.bova@dimes.unical.it