

## COMPUTER-BASED POLYPHONIC ANALYSIS OF NOVELS

Cristian DASCĂLU<sup>1</sup>, Ștefan TRĂUȘAN-MATU<sup>2</sup>

**Abstract.** *This paper presents the theoretical foundations and some implementation details of a software product to assist the analysis of narrative in novels. The approach is based on the polyphonic model introduced by Mikhail Bakhtin for novels and extended by Tannen and Trăușan-Matu to model collaboration and inter-animation in conversations. On this basis we have developed a semi-automated analysis system based on natural language processing techniques. An exemplification is presented for the case of the novel "Master and Margarita" by Mikhail Bulgakov.*

**Keywords:** Polyphonic model, inter-animation, Natural Language Processing, discourse analysis, narrative analysis

### 1. Introduction

This paper presents the theoretical foundations and some implementation details of a software application to assist the analysis of literary narratives. It is based on the polyphonic perspective introduced by Mikhail Bakhtin for novels and its extensions of Deborah Tannen [1] and Ștefan Trăușan-Matu [2, 3] to model collaboration and inter-animation in conversations. It is considered that many "voices" are present in any verbal or textual communication, including both the voices of the effective participants, but also implicit "voices", for example, the ideas discussed in the text. Based on this model and the associated analytical method [4, 5] an analysis system has been developed based on natural language processing techniques. It allows a user to identify the "voices" (in the extended sense) of narratives and the interactions between them. The system is presented and exemplified in the case of the novel "Master and Margarita" by Mikhail Bulgakov [6]. The paper continues with a presentation of the polyphonic model of discourse. In the third section the system for analyzing novels is presented. The fourth section contains the conclusions.

### 2. The Polyphonic Model of Discourse

By analyzing the works of the Russian writer Fyodor Dostoyevsky, Mikhail Bakhtin emphasized a new discourse approach in novels, which may be considered as an important cause of the remarkable distinctive value of the

---

<sup>1</sup>MSc, Faculty of Automatic Control and Computers, University "Politehnica" of Bucharest.

<sup>2</sup>Prof., PhD, Faculty of Automatic Control and Computers, University "Politehnica" of Bucharest, Senior Researcher, Research Institute for Artificial Intelligence of the Romanian Academy, full member of the Academy of Romanian Scientists (stefan.trausan@cs.pub.ro).