



Fuzzy modifiers based on fuzzy relations

Martine De Cock ^{*}, Etienne E. Kerre

*Department of Applied Mathematics and Computer Science, Ghent University,
Krijgslaan 281 (S9), B-9000 Gent, Belgium*

Abstract

In this paper we introduce a new type of fuzzy modifiers (i.e. mappings that transform a fuzzy set into a modified fuzzy set) based on fuzzy relations. We show how they can be applied for the representation of weakening adverbs (*more or less*, *roughly*) and intensifying adverbs (*very*, *extremely*) in the inclusive and the non-inclusive interpretation. We illustrate their use in an approximate reasoning scheme.

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1. Introduction

In fuzzy set theory, modifiers are often defined within the framework of linguistic variables. We prefer to tear modifiers from this context and consider them as technical tools operating on fuzzy sets, transforming one fuzzy set into another. After recalling some basic notions (Section 2), we will give a general definition of fuzzy modifiers and recall two popular types (Section 3). Grounding on the notion of “image of a fuzzy set under a fuzzy relation”, we will then introduce a new class of powerful fuzzy modifiers (Section 4).

Computing with words becomes more and more important in science and technology [23]. A key role in this discipline is played by linguistic variables. In

^{*} Corresponding author. Tel.: +32-9-264-4772; fax: +32-9-264-4995.

E-mail addresses: martine.decock@ugent.be (M. De Cock), etienne.kerre@ugent.be (E.E. Kerre).

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