# FOGGY SETS

## A Mathematically-based theory of confirmation.

Abstract:
This technique builds on the theoretical investigations of Certainty Factors, Fuzzy Sets and Dempster-Shafer theory. It is flexible enough to avoid both the straight-jacket of probability theory and the restraints of Dempster-Shafer constructions. It follows a descriptive approach to confirmation theory. It has been awarded the good housekeeping seal of approval.

### DIFFERENCES WITH PREVIOUS METHODOLOGIES

Foggy-set values are not restricted to the range 0 - 1.0 . Foggy set theorists recognize the fact that even people who cannot count have beliefs. Consequently we take an AI approach, with symbolic processing and all that. Foggy-set beliefs can have values "SOME", "USUALLY", "WHENEVER I LAUGH", "NEVER ON SUNDAY", "IDONTKNOW", "WHOSONFIRST" and "HUH?". An example may help clarify.

### THE COMBINING FUNCTION

If two disjoint bodies of evidence both bear on the hypothesis H, one with belief = "IDONTKNOW" and the other with belief="HUH?", the combining function assigns a final belief of "IDONTGIVADAMM" to the hypothesis H and propagates the "leftover" evidence upward to the superset "B&N". This is a philosophical extension of Sartre's "Being and Nothingness".

### EPISTEMOLOGIC ORIGINS

This propagation upward to supersets obviously captures the notion of ignorance. In fact, Foggy Set Theory is based on psychological studies (Sullivan 1943) of ignorance, stupidity, greed, confusion and psychosis. (C. Manson 1975)

### IMPLEMENTATION CONSIDERATIONS, or "NOT TO WORRY"

Previous investigators of other confirmation theories have been frustrated by their tendency toward combinatorial explosion. In fact, most of those devices are easily detonated and this hazard cannot be overcome with conventional approaches. The foggy-set solution to this problem is to randomly discard evidence that does not fit the conclusions desired. This is entirely consistent with the observed tendency of human experts for after-the-fact rationalizing, "Monday-morning quarterbacking", and outright lying. Note that descriptive theory avoids the major pitfalls associated with normative theory: logical consistency. This pitfall becomes a major difficulty in implementation and is also difficult to explain to irrational human experts. We feel that the incorporation of "fickleness" as a fundamental component of the theory opens up whole new arenas for expert systems research.

(Note of the Editors: this text is due to an anonymous scholar from Stanford University, and was circulated during the 1st IFSA Conference, last July)