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(54) **FUZZY LOGIC BASED SYSTEM AND METHOD FOR INFORMATION PROCESSING WITH UNCERTAIN INPUT DATA**

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(58) **Field of Search** **706/10, 8; 382/156; 342/13**

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(57) **ABSTRACT**

A fuzzy logic information processing system and method are disclosed that may be used not only with known or definite data input but also with uncertain data input. The uncertain data input may be represented by a set of values wherein the possibility of any particular or specific value within the set being the true or accurate value is uncertain. The preferred embodiment of the system provides for an extensor to extend or map a representation of the uncertain data into at least one additional dimension related to dimensions of a set of rules used for making fuzzy logic inferences. The set of rules may be provided effectively in a mapped or graphed form. The set of rules and uncertain data are combined, for instance by locating intersection regions, to produce an output set that may be also be described as a map or plot. In a presently preferred embodiment the uncertain inputs and rules are represented mathematically or symbolically and then operated on to produce an output set. A projector then projects the output set to the desired output dimension as an output for the system. The system output may then be used for control purposes such as, for example only, a combat control system to provide a tactical picture, decision aid, presets for a guidance system, or the like.

20 Claims, 4 Drawing Sheets

