

Integration of Fuzzy Logic in the Representation of Knowledge: Application in the Building Domain

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Abstract : The main object of our work is the development and the validation of a system indicated Fuzzy Vulnerability. Fuzzy Vulnerability uses a fuzzy representation in order to tolerate the imprecision during the description of construction. At the the second phase, we evaluated the similarity between the vulnerability of a new construction and those of the whole of the historical cases. This similarity is evaluated on two levels: 1) individual similarity: bases on the fuzzy techniques of aggregation; 2) Global similarity: uses the increasing monotonous linguistic quantifiers (RIM) to combine the various individual similarities between two constructions. The third phase of the process of Fuzzy Vulnerability consists in using vulnerabilities of historical constructions narrowly similar to current construction to deduce its estimate vulnerability. We validated our system by using 50 cases. We evaluated the performances of Fuzzy Vulnerability on the basis of two basic criteria, the precision of the estimates and the tolerance of the imprecision along the process of estimation. The comparison was done with estimates made by tiresome and long models. The results are satisfactory.

Keywords : case based reasoning, fuzzy logic, fuzzy case based reasoning, seismic vulnerability

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