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Ph.D. Topic:	**Fuzzy Logic Driven Software Requirements Modeling and Design**

Ph.D. Research Findings:

This Thesis is the first attempt in which fuzzy logic has been intertwined with the unified modeling language (UML) and goal oriented models so that only selected set of requirements of an information system can be modeled and designed during the development process. There are three main contributions in the present Thesis. The first contribution to the Thesis is the development of a method for modeling of software requirements from a selected set of requirements using fuzzy based approach in which both UML use-case diagrams and UML class diagrams have been used for representing the requirements of an information system (IS). In this work we have also introduced a notation to show the ranking value of the requirements in UML class diagrams. The second contribution of the Thesis is the development of a method for modeling the functional requirements (FRs) and non-functional requirements (NFRs) of an information system in which fuzzy logic was employed to deal with vagueness and impreciseness during the decision making process. The ranking order of the requirements was identified with the help of a program written in Visual C++. In the proposed methodology, FRs are modeled by UML use-case diagram, class-diagram, and activity diagram. On the other hand, the NFRs were analyzed by NFR-framework. In addition to this, NFR propagation rules have also been derived from the requirements of an IS. The third contribution to the Thesis is the development of a methodology for designing the requirements of an IS at data and architectural level because it focuses on patterns as they are applied during the development of the system. In this methodology, the fuzzy based approach has been used for the selection of pattern for designing the requirements of an IS.