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Opportunities of Soft Computing in Automating Software Development

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This work is part of the domain engineering phase of an ongoing project on model-driven software development that is intended to employ soft computing methods for both providing guidance and taking autonomous decisions in an environment that ensures a controlled software development process. Soft computing methods target real world problems which are hard to be modelled by well-defined formal engineering methods. It involves employing unconventional and so-called soft methodologies such as fuzzy logic, neural networks, support vector machines, evolutionary computation and genetic algorithms.

This work starts with the definition of soft computing, with a special emphasis on clarifying the difference between soft and hard computing, and the expected advantages of soft computing approach in certain peculiar problems of software development. The place of soft computing in software engineering, is investigated throughout the literature with the aim of determining the soft computing technology that dominates each category of requirements.

Our current observations indicate that although each technology has its own strengths, fuzzy rule based systems have clear advantages over the other approaches especially in terms of transparency, flexibility and ease of use. Fuzzy logic also facilitates effective communication within the development team even though some members of the team may be domain experts with little or no programming skills.

Keywords: Software engineering, soft computing, intelligent techniques.

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