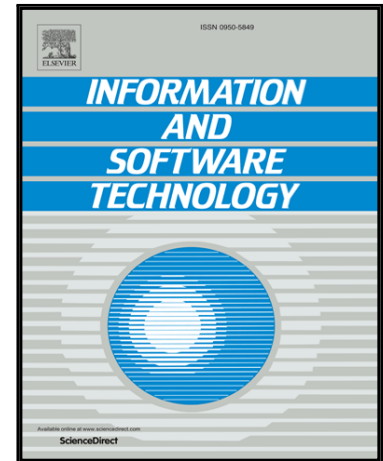


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Incorporating User Preferences in Search-Based Software Engineering: A Systematic Mapping Study

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Abstract

Context: search-based algorithms have been successfully applied to solve software engineering problems in the field known as Search-based Software Engineering (SBSE). However, in practice, the user may reject the obtained solutions, since many characteristics of the problem cannot be mathematically modeled. To cope with this situation, preference-based algorithms have been investigated and raised interest in the SBSE field.

Objective: to identify the quantity and type of research on SBSE preference-based approaches and to contribute to this new research subject, named here Preference and Search-Based Software Engineering (PSBSE),

Method: we conducted a systematic mapping, following a research plan to locate, assess, extract and group the outcomes from relevant studies.

Results: few software engineering activities have been addressed. The most used algorithms are evolutionary and single-objective. In most studies the preferences are provided interactively and, in many cases, the user preferences are incorporated in the fitness functions. We observe a lack of evaluation measures and works comparing existing approaches.

Conclusions: The use of preference-based algorithms in SBSE is an underexplored subject, and many research opportunities exist.

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