Software Engineering Seminar (WS 2016/17)

Automatic Selection of Features when Deriving a Product from a Software Product Line

Description

Software systems require complicated configurations to attain different functionalities desired by user. To model the configuration options, software product line and feature model are used. However a key challenge for deriving a new product is to find a set of features that optimize multiple objectives (e.g., minimizing cost and maximizing number of features [1, 2, 3].

The student is supposed to focus on automated techniques for product line configuration and investigate the state of the art (approaches that also go beyond [1, 2, 3]).

This work might be optionally extended for a MS Thesis if novel feature selection algorithms can be engineered.

Prerequisites

A basic knowledge of Software Engineering I/II and Requirements Engineering and Software Architectures.

References

[1] Jianmei Guo, Jules White, Guangxin Wang, Jian Li, and Yinglin Wang. A genetic algorithm for optimized feature selection with resource constraints in software product lines. *Journal of Systems and Software*, 84(12):2208–2221, 2011.

[2] Abdel Salam Sayyad, Joseph Ingram, Tim Menzies, and Hany Ammar. Optimum feature selection in software product lines: Let your model and values guide your search. In *1st International Workshop on Combining Modelling and Search-Based Software Engineering, CMSBSE@ICSE 2013, San Francisco, CA, USA, May 20, 2013*, pages 22–27, 2013.

[3] Tian Huat Tan, Yinxing Xue, Manman Chen, Jun Sun, Yang Liu, and Jin Song Dong. Optimizing selection of competing features via feedback-directed evolutionary algorithms. In *Proceedings of the 2015 International Symposium on Software Testing and Analysis, ISSTA 2015, Baltimore, MD, USA, July 12-17, 2015*, pages 246–256, 2015.

Contacts

Lars Grunske (`grunske@informatik.hu-berlin.de`)
Software Engineering Group
Institut für Informatik
Humboldt-Universität zu Berlin