Dependencies in the component selection problem

ANDREEA VESCAN

ABSTRACT.

Component Selection is a crucial problem in Component–Based Software Engineering. We adapt a Greedy approach to construct a componentbased system by introducing a new selection function. The new selection decision takes into account not only the cost of the components but also their interplay. The case study shows that considering the dependencies between the components the cost of the obtained solution may be higher due to the new selection improvement condition, but no dependencies between the selected components exist.

References

- [1] Crnkovic, I. and Larsson, M., Building Reliable Component-Based Software Systems, Artech House publisher, 2002
- [2] Haghpanah, N., Moaven, S., Habibi, J., Kargar, M. and Yeganeh, S.H., Approximation Algorithms for Software Component Selection Problem, in The 14th Asia-Pacific Software Engineering Conference, pp. 159-166, IEEE Press, ORASUL, 2007
- [3] Fox, M.R., Brogan, D.C.G. and Reynolds, P.F., Approximating component selection, in Proc. 36th conference on Winter simulation, pp. 429-434, Washington, 2004
- [4] Baker, P., Harman, M., Steinhofel, K. and Skaliotis, A., Search Based Approaches to Component Selection and Prioritization for the Next Release Problem, in The 22nd IEEE International Conference on Software Maintenance, pp. 176-185, IEEE Press, Washington, 2006
- [5] Gesellensetter, L. and Glesner, S., Only the Best Can Make It: Optimal Component Selection, Electron. Notes Theor. Comput. Sci, 176, 105-124 (2007)
- [6] Kontio, J., OTSO: A Systematic Process for Reusable Software Component Selection, Technical report, University of Maryland, 1995
- [7] Lozano-Tello, A. and Gómez-Pérez, A., BAREMO: how to choose the appropriate software component using the analytic hierarchy process, in The 14th international conference on Software engineering and knowledge engineering, pp. 781-788, ACM, New York, 2002
- [8] Alves, C. and Castro, J., Cre: A systematic method for cots component selection, in Brazilian Symposium on Software Engineering, IEEE Press, Rio De Janeiro, 2001
- [9] Alves, C. and Castro, J., Pore: Procurement-oriented requirements engineering method for the component based systems engineering development paradigm, in Int. Conf. Software Eng. CBSE Workshop, IEEE Press, ORASUL, 1999
- [10] Mancebo, E. and A. Andrews, A., A strategy for selecting multiple components, in 2005 ACM symposium on Applied computing, pp. 1505-1510, ACM, New York, 2005

BABEŞ-BOLYAI UNIVERSITY DEPARTMENT OF COMPUTER SCIENCE KOGALNICEANU 1 400084, CLUJ-NAPOCA, ROMANIA *E-mail address*: avescan@cs.ubbcluj.ro

Received: 17.09.2008; In revised form: 27.02.2009; Accepted: 17.05.2009. 2000 *Mathematics Subject Classification*. 68N19, 68Q01.

Key words and phrases. Component-based systems, component selection, dependencies.