

Interoperability Test Modelling and Generation Based on Extended Petri Net Incorporating Non-Determinism

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Received 1 October 2011; Revised 1 March 2012; Accepted 1 June 2012

Abstract. Interoperability testing is a basic necessity in the case of interconnecting network products designed to correctly transport information between devices. There are some non-determinisms within a specification as well as in its implementation. In this paper, the traditional non-determinism in a specification is thoroughly analysed, and other features are discussed, based on specifications. In order to describe a specification more precisely, basic Petri Net is extended to describe new kinds of non-determinism. Furthermore, a modelling method that considers the interaction relationship, the non-determinism and the ambiguous specification is proposed. An algorithm is introduced to generate a composite model from Petri Nets and MSC (Message Sequence Chart). Moreover, an algorithm considering optimal test sequence generation is introduced, based on the reachability graph of the synthesis of a Petri Net. Finally, the conclusion and suggestions for future research work are given.

Keywords: Modelling, Non-determinism, Petri Net, Interoperability Testing

Acknowledgement

Supported by National Natural Science Foundation of China(No.61163011); Chun Hui Project of Education Department(NO.Z2007-1-01032); Natural Science Foundation of InnerMongolia (NO.2011MS0912).

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