A Light-weight Defect Classification Scheme for Embedded Automotive Software and its Initial Evaluation

Niklas Mellegård, Miroslaw Staron and Fredrik Törner

Abstract: Objective: Defect classification is an essential part of software development process models as a means of early identification of patterns in defect inflow profiles. Such classification, however, may often be a tedious task requiring analysis work in addition to what is necessary to resolve the issue. To increase classification efficiency, adapted schemes are needed. In this paper a light-weight defect classification scheme adapted for minimal process footprint – in terms of learning and classification effort – is proposed and initially evaluated.

Method: A case study was conducted at Volvo Car Corporation to adapt the IEEE Std. 1044 for automotive embedded software. An initial evaluation was conducted by applying the adapted scheme to defects from an existing software product with industry professionals as subjects.

Results: The results showed that the classification scheme was quick to learn and understand – required classification time stabilized around 5-10 minutes already after practicing on 3-5 defects. The results also showed that the patterns in the classified defects were interesting for the professionals, although more data was needed to provide statistics.

Conclusions: We conclude that the adapted classification scheme captures what is currently tacit knowledge and has the potential of revealing patterns in the defects detected in different project phases. Furthermore, we were, in the initial evaluation, able to contribute with new information about the development process. As a result we are currently in the process of incorporating the classification scheme into the company’s defect reporting system.