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DEPARTMENT: Department of Informatics

AREA OF EXPERTISE: Software Engineering

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DISSERTATION TITLE: *MDE Techniques for Modelling and Analysis of Complex Software Systems*

In the Model-Driven Engineering (MDE) approach models are not mere documentation of a software, they are engineering artefacts that can be directly used for the development and analysis of software systems. MDE is an attractive approach as it aims to reduce the complexity of developing software, improve the quality of software and enhance productivity by automation. However, there are many challenges that need to be addressed before it can be successfully applied in the industry.

Fazle Rabbi, PhD fellow at Høgskolen På Vestlandet (HVL), addressed four challenges of applying MDE in the development of complex software systems. The task of composing different software models in a coherent way is challenging as it requires combining models with different syntax and semantics. Fazle presented several major and important contributions which provide significant progress in MDE research for composing heterogeneous software models in a coherent way. He enhanced an existing diagrammatic approach to aid the software designer for integrating various concerns or aspects of a system. To show the effectiveness of the approach, several examples from the healthcare domain have been illustrated and formalized using diagrammatic modeling. The results of the thesis are both theoretical and practical in nature and provides a list of contribution for applying MDE techniques in developing software in a large context. The proposed approach is supported by a web based modeling editor and case studies from the healthcare domain.

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