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ICONI & APIC-IST 2010, December 16 –20

Crimson Resort, Mac tan Island, Philippines

Conference Program

| Host by |

Korean Society for Internet Information (KSII)
Korea Institute of Science and Technology Information (KISTI)
Korea Internet and Security Agency (KISA)
Korea Electronics Technology Institute (KETI)

Session 20: Poster II
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20-3	The Design of a Proactive Alarm Reduction for SMART (pp. 547~548)
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	Myoungrak Lee (Korea Air Force), Dohoon Kim (Korea Univ.), Byungsik Yoon, Song in Choi (ETRI), Hoh Peter In (Korea Univ.)
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	Juhee Kim, Sangwoo Kang, Choong-nyoung Seon, Jungyun Seo (Sogang Univ.)
20-12	Privacy Enhanced Security Architecture for Computational Grid (pp. 565~566)
	SangBae Park (KISTI)
20-13	Customer Value-Based Requirements Prioritization (pp. 567~568)
	Youngsub Han, Neunghoe Kim, Hoh Peter In (Korea Univ.)
20-14	Novel Cell Tracking Method for Automatic Analysis of Cellular Sequences (pp. 569~573)
	Chan-Hee Han, In-Hwan Song (Hanbat National Univ.), Yun-Ho Ko (Chungnam National Univ.), Hyun-Soo Kang (Chungbuk National Univ.), Si-Woong Lee (Hanbat National Univ.)
20-15	Study on the distance measurement for localization based on the IEEE 802.15.4a (pp. 575~579)
	Inseok Moon, Bong-Soo Ha, Hie-Cheol Kim, Won-Kee Hong, Juang-Tak Ryu, Byung-Hyun Moon, Kyuman Jeong (Daegu Univ.)

A Study on Target Model Generation for Smartphone Applications using Model Transformation Technique

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Abstract

On the rapidly change smart phone environments, it needs to develop many smart applications very quickly, that is, time-to-market. So, we will apply model transformation techniques to heterogeneous smart phone area. This paper mentions model transformation how to apply for heterogeneous smart-phone applications. We suggest automatic target model generation how to automatically generate software for heterogeneous smart phones at a time.

***Keywords*:** Model Transformation, Smartphone Application

1. Introduction

Smart phone applications are developed based on platforms. Platform based development means to possibly develop very quickly through reusing a lot of parts of software, but difficult to develop on heterogeneous system environment [1]. To solve this kind of problem, it had a trial to make intermediate model before generating code through the original model [2].

This intermediate model is used to make more modules and maintainable transformation, optimization and tuning, and to reduce defects [3]. In other approach, one target independent model (TIM) is modeled on embedded systems, which converts target specific models (TSM) for each heterogeneous platform [4]. Then it may be possible to generate more right codes [5].

Model transformation may provide quickly to develop heterogeneous code on each different platform with reusing target independent model (TIM). In this paper, we will apply model transformation techniques to heterogeneous smart phone area.

2. Model Transformation Framework

Fig. 2 shows overview of model transformation framework. We did use Model with UML, Metamodel with UML Metamodel, and Model transformation with ATL

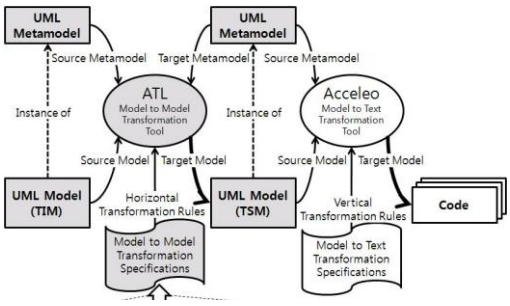

Fig. 2. Overview of Model Transformation Framework

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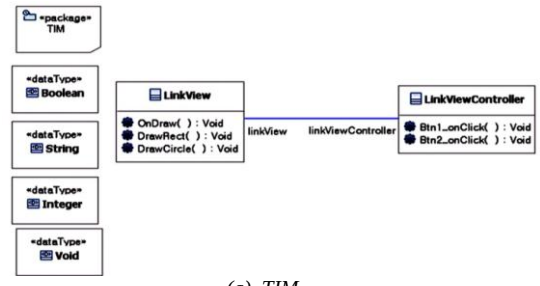
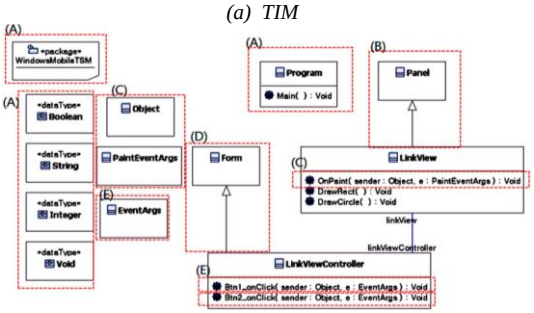
3. Target Model Generation

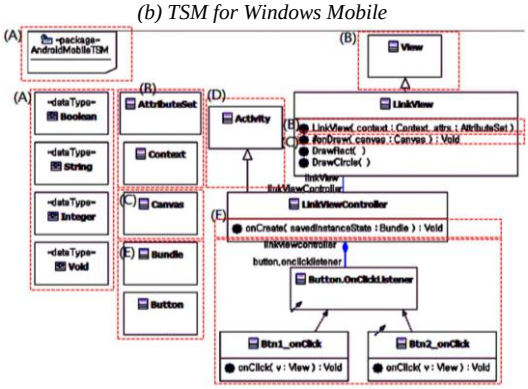
This section shows to automatically generate examples of Window Mobile and Android with one target independent model. **Fig. 3** shows (a)TIM, (b)Windows Mobile, and (c)Android after transforming TIM.



(a) TIM



(b) TSM for Windows Mobile



(c) TSM for Android

Fig. 3. Result of Model Transformation

In **Fig 3**. (a), TIM consists of LinkView and LinkViewController. LinkView is the view class to represent picture on the display, and LinkViewController is the control class to handle any event happened on the display. In this paper, we have limited to use two buttons such as Btn1_onClick() and Btn2_onClick(). These methods are included in LinViewController class. Button1, that is, Btn1_onClick() means to open web browser, and to move the designated page. Button 2, that is, means to draw circle and rectangle on the display. When two TSMs are transformed from one TIM, 1) in one TSM on Window mobile: LinkView class has the generalization relationship with Panel class, that is, inherits from Panel class in **Fig. 3** (b), and 2) another TSM on Android: LinView class inherits from View class in **Fig. 3** (c). In the same way as LinkView, LinkViewController also inherits from Form class on Window mobile, and from Activity class on Android.

Like **Fig. 3** (b,c), it will be added with other dependency and association relationship for each target specific model. The most important issue is that when several TSMs(Window mobile and Android) are transformed from one TIM in **Fig. 3** (a), they will be automatically generated with classes and methods, but not just added.

4. Conclusion

Recently smart phones will be hot issues. Many hardware devices and platforms will be produced very quickly. Many new different platform techniques will be very effective for developing one kind of them, but not suitable for heterogeneous applications. In this paper, to solve this problem, we will apply model transformation for smart phone application area.

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