Yingfei Xiong

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Current Position

Ph.D. Student (expected to graduate in September 2009)

Information Processing Lab

Department of Mathematical Informatics

Graduate School of Information Science and Technology

The University of Tokyo

Education

Sep 2009 (Expected)	Ph.D. in Computer Science
	The University of Tokyo
	Advisors: Zhenjiang Hu and Masato Takeichi
	Thesis: "A Language-based Approach to Model Synchronization in Software Engineering"
Sep 2004 ~Sep 2006	Graduate Student in Computer Science
	Peking University
	Advisors: Hong Mei and Fuqing Yang
Jul 2004	B.S. of Computer Science
	University of Electronic Science and Technology of China
	Advisor: Yue Wu
	Thesis: "The Design and Implementation of a Language-Independent Aspect-Oriented Extension"

Research

Ph.D. Research

Thesis Title: *A Language-based Approach to Model Synchronization in Software Engineering*

Software development of involves models with complex consistency relations。 For example, different diagrams in a UML model are related, while a UML model is related to the code generated from it. When any model is changed by users, we must propagate the updates across all models to make them consistent.

In my Ph.D. thesis we propose a language-based approach to model synchronization. We add synchronization semantics to existing languages. When users describe consistency relations in these languages, we automatically generate a synchronizer for keeping models consistent. In addition, my Ph.D. thesis proposes the basic requirement for model synchronization.

In particular, my Ph.D. research is implemented as two tools, Beanbag and SyncATL. Beanbag is a language similar to Object Constraint Language (OCL) but with a few extension to precisely specify synchronization behavior. When users describe a consistency relation in Beanbag, the Beanbag compiler generates a synchronizer that takes updates on models and produce new updates to make models consistent. SyncATL is based on ATLAS Transformation Language (ATL). Given a transformation program in ATL that converts a model into other model, SyncATL generates a synchronizer to keep the two model consistent. Both tools have been used by several research groups developing different types of applications.

Related Links

Beanbag: http://www.ipl.t.u-tokyo.ac.jp/~xiong/beanbag.html
SyncATL: http://www.ipl.t.u-tokyo.ac.jp/~xiong/modelSynchronization.html
reSync (a UML synchronization tool developed by Atenea group using Beanbag):
http://atenea.lcc.uma.es/index.php/Portada/Resources/reSynch

Other Research

Sep 2004   Peking University
~Sep 2006   Advisors: Hong Mei and Fuqing Yang

       I proposed a language extension to model check distributed transactions. Distributed transactions are prevalent in distributed systems, but are

not easy to model using current model checking languages. I designed an extension to the model checking language Promela, which contains high-level constructs for users to easily model systems with distributed transactions. When users write programs in the extended Promela, these programs are automatically translated into standard Promela, which can be checked by the model checking tool Spin.

Mar 2004 ~Jun 2004	Graduation Thesis, University of Electronic Science and Technology of China Advisor: Yue Wu I designed an aspect-oriented intermediate language to facilitate the implementation of aspect-oriented languages on the .Net platform. The .Net platform is a multi-language platform. Many researchers design aspectual extensions for the languages on .Net platform, but their compilers (weavers) are independently developed. Due to the complexity of high-level languages, implementing the compilers is not easy. I designed CCC, an aspect-oriented intermediate language on .Net platform. Aspect-oriented .Net language could first be transformed to CCC and then woven by CCC compiler. Since CCC contains many high-level aspect-oriented language constructs, it saves a lot of work in language implementation. **Related Link** CCC: http://xiong.yingfei.googlepages.com/ccc

Publications

International Conference Papers

[1] Yingfei Xiong, Zhenjiang Hu, Haiyan Zhao, Hui Song, Masato Takeichi, Hong Mei. Supporting Automatic Model Inconsistency Fixing. In Proceedings of 7th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE'09) (to appear), August 2009. (15% acceptance)

[2] Yingfei Xiong, Hui Song, Zhenjiang Hu, Masato Takeichi. Supporting Parallel Updates with Bidirectional Model Transformations. In Proceedings of the Second International Conference on Model Transformation (ICMT'09), ETH Zurich, Switzerland, to appear, June 2009. (22% acceptance)

[3] Yingfei Xiong, Dongxi Liu, Zhenjiang Hu, Haiyan Zhao, Masato Takeichi, Hong Mei. Towards Automatic Model Synchronization from Model Transformations. In Proceedings of the 22nd IEEE/ACM International Conference on Automated Software Engineering (ASE'07), Atlanta, Georgia, pages 164-173, November 2007. (12% acceptance)

Domestic Conference Papers

[4] Yingfei Xiong, Zhenjiang Hu, Hui Song, Masato Takeichi, Haiyan Zhao, Hong Mei. On-Site Synchronizers for Multi-View Applications. In Proceedings of the 25th JSSST Conference, No. 3C-2, Tokyo, Japan, September 2008.

[5] Dongxi Liu, Keisuke Nakano, Yasushi Hayashi, Zhenjiang Hu, Masato Takeichi, Akimasa Morihata, Yingfei Xiong. Bi-X Core: A General-Purpose Bidirectional Transformation Language. In Proceedings of the 24th JSSST Conference, No. 2C-3, Nara, Japan, September 2007.

[6] Yingfei Xiong, Zhenjiang Hu, Dongxi Liu, Haiyan Zhao, Hong Mei, Masato Takeichi. Realizing Bidirectional Graph Transformations From Bidirectional Tree Transformations. In Proceedings of the Information Processing Society of Japan National Conference (IPSJ'07), No. 1B-7, Tokyo, Japan, March 2007.

Workshop Papers

[7] Yingfei Xiong, Dongxi Liu, Zhenjiang Hu, Masato Takeichi. A Bidirectional Transformation Approach towards Automatic Model Synchronization. In (informal) Proceedings of the 2nd Summer School on Generative and Transformational Techniques in Software Engineering (GTTSE'07), pages 359–360, July 2007.

[8] Yingfei Xiong, Hui Song, Zhenjiang Hu, Masato Takeichi. From Bidirectional Model Transformation to Model Synchronization. In Proceedings of the Sixth Asian Workshop on Foundations of Software (AWFS'09), Tokyo, Japan, pages 56-65, April 2009.

[9] Yijun Yu, Haruhiko Kaiya, Hironori Washizaki, Yingfei Xiong, Zhenjiang Hu, Nobukazu Yoshioka. Enforcing a Security Pattern in Stakeholder Goal Models. In Proceedings of the 4th Workshop on Quality of Protection, co-located with CCS-2008, Alexandria VA, USA, pages 9-14, October 2008.

[10]   Dongxi Liu, Yingfei Xiong, Zhenjiang Hu, Masato Takeichi. Bi-CQ: A Bidirectional Code Query Language. In (informal) Proceedings of the 2nd Summer School on Generative and Transformational Techniques in Software Engineering (GTTSE'07), pages 348–349, July 2007.

[11]   Yingfei Xiong, Feng Wan. CCC: An Aspect-Oriented Intermediate Language on .Net Platform. In Proceedings of the International Workshop on Aspect-Oriented Software Development, pages 44-58, September 2004.

Technical Reports

[12]   Hui Song, Yingfei Xiong, Zhenjiang Hu, Gang Huang, Hong Mei. A Model-Driven Framework for Constructing Runtime Architecture Infrastructures. Technical Report GRACE-TR-2008-05, Center for Global Research in Advanced Software Science and Engineering, National Institute of Informationtics, Japan, December 2008.

[13]   Yingfei Xiong, Haiyan Zhao, Zhenjiang Hu, Masato Takeichi, Hui Song, Hong Mei. Beanbag: Operation-based Synchronization with Intra-relations. Technical Report GRACE-TR-2008-04, Center for Global Research in Advanced Software Science and Engineering, National Institute of Informationtics, Japan, December 2008.

[14]   Yingfei Xiong, Zhenjiang Hu, Masato Takeichi, Haiyan Zhao, Hong Mei. On-Site Synchronization of Software Artifacts. Technical Report METR 2008-21, Department of Mathematical Informatics, University of Tokyo, April 2008.

[15]   Zhenjiang Hu, Dongxi Liu, Hong Mei, Masato Takeichi, Yingfei Xiong, Haiyan Zhao. A Compositional Approach to Bidirectional Model Transformation. Technical Report METR 2006-54, Department of Mathematical Informatics, University of Tokyo, October 2006.

Thesis

[16]   Yingfei Xiong. The Design and Implementation of a Language-Independent Aspect-Oriented Extension. Bachelor Thesis, UESTC, July 2004.

Presentations

[1] Facilitating Model Inconsistency Fixing. 18th GRACE Seminar on Advanced Software Science and Engineering, April 2009.

[2] Beanbag: Operation-based Synchronization with Intra-Relation Support. 2nd International Workshop on Bidirectional Transformation in Architecture-Based Component Composition, Kanagawa, Japan, January 2009.

[3] Operation-Based Synchronization with Intra-Relation Support. GRACE International Meeting on Bidirectional Transformations, Kanagawa, Japan,

December 2008.

[4] Synchronizing Software Engineering Artifacts. Invited seminar talk, Institute of Software, Chinese Academy of Science, China, March 2008.

[5] Synchronizing Software Engineering Artifacts. Invited seminar talk, Software Engineering Institute, Peking University, China, March 2008.

[6] Towards Automatic Model Synchronization from Model Transformation. 1st Joint Workshop on Bidirectional Transformation in Architecture-Based Component Composition, Beijing, China, December 2007.

Academic Service

- **Local Organization:** AWFS 2009
- **External Reviewer:** SEKE 2006, ICSM 2006, GPCE 2006, GTTSE 2007, Journal of Software (one paper in 2008), MODELS 2009

Professional Societies

- Student member, Japan Society for the Promotion of Science
- Student member, Japan Society for Software Science and Technology

Industrial Experience

In the first year of my undergraduate study, I founded an independent software development team, SwiftWing Studio, consisting of five members. During the following four years, we developed several commercial and non-commercial software projects. Some of them are listed as below:

- **Electric Grid Modeling Tool, 2004**
  - ➢ Graphic modeling tool developed using Magic Chart (described below)
  - ➢ Used as the modeling component of an electrical system developed by Chengdu Hualida Co. Ltd
  - ➢ Sold to several major grid companies in China by Hualida Co.Ltd
- **Online Programming Contest System, 2003**
  - ➢ A Windows-based system for supporting online programming contest like ACM-ICPC
  - ➢ Used in the first online programming contest of UESTC
  - ➢ Winning an entry prize in Microsoft "Imagine Cup" national software contest

- **Magic Chart, 2003**
  - ➢ A C++ and MFC based graph framework
  - ➢ Winning a second prize in software contest of graduate students in UESTC
- **Sellers Management System for Dule Co., 2002**
  - ➢ A .Net based MIS system
  - ➢ Used in Chengdu Dule Electronic Science Book Store Co. Ltd
- **ChatAnyWhere, 2001**
  - ➢ A P2P instant messenger used in LAN.
  - ➢ Winning a second prize in "Huawei Cup" student scientific innovation contest of UESTC

Teaching Experience

Autumn 2005   Peking University
Teaching assistant for "Formal Languages and Automata Theory", a course for graduation student.
My task was to evaluate and correct students' homework.

Spring 2001   University of Electronic Science and Technology of China
Instructor for "The C Programming Language", a course for undergraduate student
Together with other 3 instructors, I taught this course to students in the same grade as me.

Awards and Honors

2008   ● The Best Team Award of IPL Programming Contest 2008
2007   ● The Best Team Award of IPL Programming Contest 2007
        ● The Most Valuable Player Award of IPL Programming Contest
2006   ● Special Scholarship for International Students, University of Tokyo (three years)
        ● Tri-A Student of Peking University
        ● The 6th in the 400-meter hurdles of Peking University
2005   ● Entry Prize in "Baidu Star" National Programming Contest (Top 50)
        ● Dean's Award for Study Excellence
        ● Canon Scholarship
        ● The 5th in the 400-meter hurdles of Peking University

2004	•	The People's First-Class Scholarship for Excellent Student
	•	"Computer World" Excellent Student Scholarship
	•	The Outstanding Student Award in UESTC (The highest award for students in UESTC)
	•	Outstanding Graduate Student of Sichuan Province
	•	Excellent Graduate Thesis of UESTC
	•	Second Prize in Software Contest of Graduate Students in UESTC
	•	Class-A in Integrated Quality in Sichuan Province
2003	•	The People's Special Scholarship for Excellent Student (1%)
	•	IBM Excellent Student Scholarship
	•	Excellent League Member of UESTC
	•	Second Prize in Software Contest of Graduate Students in UESTC
	•	Third Prize in "Schoolmates Cup" Programming Contest of UESTC
	•	Entry Prize in Microsoft "Imagine Cup" National Software Contest (Top 50)
2002	•	The People's Special Scholarship for Excellent Student (1%)
	•	The Excellent Student Award in Summer Social Practice
2001	•	The People's Special Scholarship for Excellent Student (1%)
	•	Samsung Scholarship
	•	Excellent League Member on Campus
	•	Second Prize in National College English Contest
	•	Second Prize in "Huawei Cup" Student Scientific Innovation Contest of UESTC
1999	•	First Prize in National Olympiad in Informatics (Sichuan Province)

Languages

Chinese (native), English (fluent), Japanese (basic)

Reference

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