Curriculum Vitae

Jörg Kienzle

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Personal Data

Address	School of Computer Science, McGill University 3480 University, McConnell Engineering Room 318 Montreal, QC H3A 0E9, Canada
Telephone	++1 (514) 398-2049
Fax	++1 (514) 398-3883
Email	Joerg.Kienzle@mcgill.ca
Webpage	http://www.cs.mcgill.ca/~joerg/
Date of Birth	31st of July, 1970 in Princeton, NJ, USA
Nationality	Swiss (Permanent Resident of Canada)
Languages	German (mother tongue), French and English

Education

Ph.D. Software Engineering Laboratory, Computer Science Department, Swiss Federal Institute of Technology Lausanne (EPFL), Lausanne, Switzerland, June 2001.
Thesis #2393: "Open Multithreaded Transactions: A Transaction Model for Concurrent Object-Oriented Programming"

Dipl.Ing.Inf. Swiss Federal Institute of Technology Lausanne (EPFL), Lausanne, Switzerland, April 1997.[1]
Thesis: "Network Applications in Ada 95"

High School Realgymnasium, Basel, Switzerland, March 1989.
Graduated with a "Matura Typus B" (Latin)

Academic, Work and other Experience

- **June 2008 - present**
  Associate Professor, School of Computer Science, McGill University, Montreal, Canada
- **August 2002 - May 2008**
  Assistant Professor, School of Computer Science, McGill University, Montreal, Canada

[1] Similar to a M.Sc. with major in Computer Science

- **June 2001 - July 2002**
  Senior Research Assistant and Course Lecturer, Software Engineering Lab, Swiss Federal Institute of Technology, Lausanne, Switzerland
- **April 1997 - April 2001**
  Research and Teaching Assistant, Software Engineering Lab, Swiss Federal Institute of Technology, Lausanne, Switzerland
- **August 1994 - May 1995**
  Exchange year at Carnegie Mellon University, Pittsburgh, PA, USA
- **January 1990 - July 1995**
  Development of two computer games, "Gate" and "Spacefox" (first using 65c816 assembler on the Apple II GS, then 68k assembly, C and Pascal for the Macintosh). Both games were published by the company Toolbox (France) and then later by Seven Hills Software (USA).
- **March 1989 - March 1992**
  Professional Ice Dancing Career. Highest international rank: 18th / 27 at the World Figure Skating Championships in San Francisco, USA, March 1992.
- **March 1988 - March 199**1
  Part time job as a database programmer at Hoffman-La Roche AG, Basel, Switzerland.

Grants

2013 - 2018 **NSERC Discovery Grant** "Concern-Oriented Software Development"
Amount: $35,000 for 5 years (total of $175,000)

2013 - 2015 **NSERC Discovery Accelerator Supplement**
Amount: $40,000 for 3 years (total of $120,000)

2010 - 2014 **NSERC Strategic Network Grant** (Natural Sciences and Engineering Council of Canada) "SURFNet: Digital Surface Software Application Network"
Amount: $1,000,000 for 5 years (total of $5,000,000) (together with 12 other professors)

2012 - 2013 **NSERC Discovery Grant** "Aspect-Oriented Software Development"
Amount: $22,000 for 1 year

2007 - 2010 **NSERC Strategic Grant** "Consistency and Instanced Massively Multiplayer Games"
Amount: $99,060 for 3 years (total of $297,180) (together with Prof. Clark Verbrugge and Prof. Bettina Kemme)

2007 - 2012 **NSERC Discovery Grant** "Engineering Fault Tolerance"
Amount: $22,000 for 5 years (total of $110,000)

2007 **DRDC** (Canadian Defense Research and Development) **Contract**
Amount: $22,000

2004 - 2006 **McGill** Research Grants Office **Seminar** Grant "School of Computer Science Colloquium"
Amount: $6,500

2003 - 2007 **NSERC Discovery Grant** "Engineering Fault Tolerance"
Amount: $21,000 for 4 years (total of $84,000)

2003 - 2006 **FQRNT** (Fonds québécois de la recherche sur la nature et les technologies) **Nouveau Chercheur Grant** "Programmation Orienté-Aspect et Génie Logiciel"
Amount: $15,000 for 3 years (total of $45,000)

2004 - 2006 **CFI New Opportunities** Equipment Maintenance Grant
Amount: $25,718 (in conjunction with Prof. Clark Verbrugge)

2003 **FQRNT Nouveau Chercheur** Equipment Grant
Amount: $15,000

2003 **CFI** (Canadian Foundation for Innovation) **New Opportunities** Grant "Fault-tolerant Massive Multiplayer Gaming Infrastructure"
Amount: $214,319 (in conjunction with Prof. Clark Verbrugge)

2002 **McGill** Research Grants Office **Startup** Grant
Amount: $20,000

2002 **McGill** School of Computer Science **Startup** Grant
Amount: $50,000

Awards

- **Best Paper**, 15th International Workshop on Aspect-Oriented Modeling, Oslo, Norway, October 2010
- **Best Paper**, 11th International Workshop on Aspect-Oriented Modeling, Nashville, TN, USA, September 2007
- **Prix ABB**, September 2002
  Award "ABB en technologie d'information et d'automatisation", given once every second year for an innovative Ph.D. thesis in the field of Computer Science at the Swiss Federal Institutes of Technology, Board of the Swiss Federal Institutes of Technology, Switzerland
- **Best Paper**, International Conference on Reliable Software Technologies – Ada-Europe'2000, Potsdam, Berlin, Germany, June 2000
- **Prix ELCA Informatique,** April 1997
  Computer Science student with the best results in the diploma examinations and diploma project (9.9/10), Swiss Federal Institute of Technology Lausanne, Lausanne, Switzerland

Most Significant Contributions to Research

1. **Aspect-Orientation**
   Aspect-orientation (AO) is still a fairly new modularization paradigm, and there is a need for the research community to demonstrate the potential of AO on case studies of significant size. To evaluate aspect-oriented programming language properties, I proposed the AspectOptima case study [38], a transaction framework consisting of 37 aspects, and showed how to implement it in the programming language *AspectJ* [8]. In 2009, I proposed the *Crisis Management System* case study to the aspect-oriented modelling community [9]. I edited a special issue of the journal *Transactions on Aspect-Oriented Development* about this case study with worldwide contributions from AOM researchers [9]. Since then, 4 workshops have already been held that compared different AOM approaches by means of this case study.

The quality of my research in the field of AO has been highly recognized by the AO community. A proof of that is that I was asked to be the PC chair of the main conference in this field, the ACM/IEEE Conference on Modularity/Aspect-Oriented Software Development in 2013.

2. **Aspect-Oriented Modelling / Model-Driven Engineering**
   In the past 7 years I have devised a novel approach to aspect-oriented modelling (AOM) called *Reusable Aspect Models* (RAM) that makes scalable multi-view modelling possible [47, 52, 54, 10, 59, 15, 65]. A RAM aspect model describes the structure and the behavior of a design concern using class diagrams, sequence diagrams and state diagrams. Each model specifies a usage and a customization interface, which our TouchRAM tool [69] uses to ensure correct model reuse. With TouchRAM, a developer can generate woven models of considerable size based on multiple, small, individually reusable aspect models. RAM today is one of the most comprehensive aspect-oriented modelling approaches world-wide, involving researchers and users from Canada, the US, France, Norway, Luxembourg and Germany. Demos of TouchRAM were presented at several high-caliber conferences and workshops (RE 2012, MODELS 2012, SLE 2012, SurfNet 2011/2012, Modularity:AOSD 2013, MODELS 2013, Modularity:AOSD 2014).
   RAM was evaluated on several case studies of significant size. For instance, a RAM design for AspectOptima has been published in [52], and the design of the crisis management system in [10].
   I have co-organized 14 1-day workshops on Aspect-Oriented Modelling since 2002, co-located with the AOSD and MODELS conferences, as well as organized 5 1-week workshops on Aspect-Oriented Modelling at the Bellairs McGill Research Institute. I have been the workshop chair for MODELS 2011, the tutorial chair for MODELS 2013, and will be the PC chair of MODELS 2016.

3. **Concern-Orientation**
   Concern-orientation is an new paradigm introduced by my research team in 2013 [79] that combines the ideas of Model-Driven Engineering (MDE), advanced modularization techniques (aspects), and software product lines, to address the challenge of how to enable broad-scale, model-based reuse. A concern is a unit of reuse that groups together software artifacts (models and code) describing properties and behaviour related to any domain of interest to a software engineer at different levels of abstraction.
   A concern provides a three-part interface. The *variation interface* describes required design decisions and their impact on high-level system qualities, both explicitly expressed using feature models and goal models in the concern specification. The goal models used in CDD are called impact models. The *customization interface* allows the chosen variation to be adapted to a specific reuse context, while the *usage interface* defines how the functionality encapsulated by a concern may eventually be used [80].
   TouchRAM, our aspect-oriented modelling tool, is currently being updated to support concern-orientation.

4. **Integrating Fault Tolerance into the Software Development Life Cycle**
   Over the last five years I have been working on integrating the concern of fault tolerance into the software development life cycle. Having fault tolerance in mind from the beginning allows software developers to *engineer* support for fault tolerance. At the requirements level, discovering and documenting all possible abnormal situations and irregular user behavior that can interrupt normal system interaction is of tremendous importance in the context of dependable system development. To this aim we show in [35, 13] how use cases can be extended to address exceptional situations. This makes it possible to discover and then specify the required level of fault tolerance precisely at an early stage. We then show in [40] how the exceptional use cases can be probabilistically analyzed to get feedback on the achievable safety and reliability of the system, if it were to be built with a given set of (potentially failing) components. Based on the detailed specification of normal and exceptional behavior and the desired reliability and safety of the system, an appropriate software architecture

and efficient fault tolerance techniques can be employed during design. [14] presents DREP, our dependability-focussed requirements engineering process in detail. [50] shows how we integrated degraded service outcomes and exceptional modes of operations into our model-driven requirements engineering process, and [55] presents how we employ model transformation techniques to map use cases to activity diagrams. Finally, in [36] we show how a model-driven approach and model simulation can efficiently analyze the fault tolerance properties of complex systems to help the developer in determining the performance of different fault tolerance techniques.

5. **Elaboration of a New Transaction Model named *Open Multithreaded Transactions***
   In [1, 28] I propose a new transaction model named *Open Multithreaded Transactions* (OMTT), which provides features for controlling and structuring not only accesses to objects, as usual in transaction systems, but also threads / processes taking part in transactions. The model allows several threads to enter the same transaction in order to perform a joint activity. The OMTT model incorporates disciplined exception handling adapted to nested transactions. It allows individual threads to perform forward error recovery by handling an abnormal situation locally, and promotes a defensive approach for developing transactional objects, so that errors are detected early and dealt with inside the transaction. If local handling fails, the transaction support applies backward error recovery and reverses the system to its initial state. Due to the isolation property and disciplined exception handling, OMTTs do not allow errors to propagate to the outside, and hence constitute ideal units of fault tolerance for structuring the execution of loosely coupled cooperative and competitive concurrent systems. The model has been validated through the design and implementation of an online auction system[31]. [39] investigates a performance enhancement technique for OMTTs that allows participating threads to exit an ongoing transaction under the assumption that the transaction will commit.

6. **Design of Optima, a Framework Providing Transaction Run-Time Support**
   Optima [1] is a highly customizable framework providing the necessary run-time support for transactions, and OMTTs in particular. The framework supports among others optimistic and pessimistic concurrency control, different recovery strategies (i.e. Undo/Redo, NoUndo/Redo, Undo/NoRedo), different caching techniques, different update strategies, different logging techniques (i.e. physical logging and logical logging), and different storage devices. Among pessimistic concurrency control, the framework provides built-in support for lock-based concurrency control, with strict read / write or commutativity-based locking.
   Different interfaces for an application programmer have been developed, including a procedural, an object-based, an object-oriented interface and an aspect-oriented interface [30] (the feasibility and the elegance of the interfaces depend of course on the available features of the programming language). The framework has been implemented for Ada 95 [26, 3], Java and using the CORBA OTS [33]. AspectOptima [38, **?**] is an aspect-oriented implementation of Optima done in AspectJ.

7. **Massively Multiplayer Games**
   In 2005, I started the development of Mammoth [105], a massively multiplayer online game (MMOG) research framework. MMOGs, where thousands of players around the globe connect via their home computers to a common game platform, present many new research challenges in the areas of scalability, consistency, and fault tolerance. In [44] we present measurements obtained in Mammoth using human and computer-generated player actions that show that interest management techniques based on an obstacle-aware partitioning of the virtual world significantly reduce the number of required update messages. We also show that the same partitioning can be used to perform dynamic load balancing [66], and present a unified framework for load-balancing, fault tolerance and cheat detection in [11]. In [41] and [45] we demonstrate how the ideas of model-driven development can be used in the context of computer game AI, in particular to increase the modularity and reusability of behaviour specifications [61, 73]. Recently, we started investigating how to provide MMOG services such as

message dissemination, interest management, and game object storage in the Cloud [85].

Publications

Books

[1] J. Kienzle, *Open Multithreaded Transactions — A Transaction Model for Concurrent Object-Oriented Programming*. Kluwer Academic Publishers, 2003.

Journals

[2] A. J. Wellings, B. Johnson, B. Sanden, J. Kienzle, T. Wolf, and S. Michell, "Integrating Object-Oriented Programming and Protected Objects in Ada 95," *ACM Transactions on Programming Languages and Systems*, vol. 22, pp. 506 – 539, May 2000.

[3] J. Kienzle and A. Romanovsky, "A Framework Based on Design Patterns for Providing Persistence in Object-Oriented Programming Languages," *IEE Proceedings - Software Engineering*, vol. 149, pp. 77 – 85, June 2002.

[4] J. Kienzle, "On Atomicity and Software Development," *Journal of Universal Computer Science*, vol. 11, pp. 687 – 702, May 2005.

[5] A. Denault and J. Kienzle, "Avoid common pitfalls when programming 2D graphics in Java: Lessons learnt from implementing the Minueto toolkit," *ACM Crossroads*, vol. 13, March 2007.

[6] M. Zia, S. Mustafiz, H. Vangheluwe, and J. Kienzle, "A Modelling and Simulation Based Process for Dependable Systems Design," *Software and Systems Modeling*, pp. 437 – 451, April 2007.

[7] S. Mustafiz, X. Sun, J. Kienzle, and H. Vangheluwe, "Model-Driven Requirements Assessment of System Dependability," *Software and Systems Modeling*, pp. 487 – 502, October 2008.

[8] J. Kienzle, E. Duala-Ekoko, and S. Gélineau, "AspectOPTIMA: A Case Study on Aspect Dependencies and Interactions," *Transactions on Aspect-Oriented Software Development*, vol. 5, pp. 187 – 234, March 2009.

[9] J. Kienzle, N. Guelfi, and S. Mustafiz, "Crisis Management Systems: A Case Study for Aspect-Oriented Modeling," *Transactions on Aspect-Oriented Software Development*, vol. 7, pp. 1 – 22, 2010.

[10] J. Kienzle, W. A. Abed, F. Fleurey, J.-M. Jézéquel, and J. Klein, "Aspect-Oriented Design with Reusable Aspect Models," *Transactions on Aspect-Oriented Software Development*, vol. 7, pp. 272 – 320, 2010.

[11] A. Denault and J. Kienzle, "Journey: A massively multiplayer online game middleware," *IEEE Software*, vol. 28, pp. 38–44, September 2011.

Refereed Bookchapters

[12] A. Romanovksy and J. Kienzle, "Action-Oriented Exception Handling in Cooperative and Competitive Object-Oriented systems," in *Advances in Exception Handling Techniques* (A. Romanovsky, C. Dony, J. L. Knudsen, and A. Tripathi, eds.), no. 2022 in Lecture Notes in Computer Science, pp. 147 – 164, Springer Verlag, 2001.

[13] A. Shui, S. Mustafiz, and J. Kienzle, "Exception-Aware Requirements Elicitation with Use Cases," in *Advanced Topics in Exception Handling Techniques* (A. Romanovsky, C. Dony, J. L. Knudsen, and A. Tripathi, eds.), no. 4119 in Lecture Notes in Computer Science, pp. 221 – 242, Springer Verlag, 2006.

[14] S. Mustafiz and J. Kienzle, "A Requirements Engineering Process for Dependable Reactive Systems," in *Methods, Models and Tools for Fault Tolerance* (A. Romanovsky, C. Jones, J. L. Knudsen, and A. Tripathi, eds.), no. 5454 in Lecture Notes in Computer Science, pp. 220 – 250, Springer Verlag, 2009.

[15] M. E. Kramer and J. Kienzle, "Mapping Aspect-Oriented Models to Aspect-Oriented Code," in *Models in Software Engineering*, no. 6627 in Lecture Notes in Computer Science, pp. 125 – 139, Springer Verlag, 2011.

[16] G. Mussbacher, W. Al Abed, O. Alam, S. Ali, A. Beugnard, V. Bonnet, R. Broek, A. Capozucca, B. Cheng, U. Fatima, R. France, G. Georg, N. Guelfi, P. Istoan, J.-M. Jézéquel, J. Kienzle, J. Klein, J.-B. Lézoray, S. Malakuti, A. Moreira, A. Phung-Khac, and L. Troup, "Comparing six modeling approaches," in *Models in Software Engineering* (J. Kienzle, ed.), vol. 7167 of *Lecture Notes in Computer Science*, pp. 217–243, Springer Berlin / Heidelberg, 2012.

[17] W. Al Abed, M. Schötitle, A. Ayed, and J. Kienzle, "Concern-oriented behaviour modelling with sequence diagrams and protocol models," in *Behavior Modeling-Foundations and Applications*, vol. 6368 of *LNCS*, p. to appear, Springer, 2015.

Refereed Conferences and Workshops

[18] J. Kienzle, T. Wolf, and A. Strohmeier, "Secure Communication in Distributed Ada," in *1st International Conference on Reliable Software Technologies - Ada-Europe 96, Montreux, Switzerland, June 10-14, 1996*, no. 1088 in Lecture Notes in Computer Science, pp. 198 – 210, Springer Verlag, 1996.

[19] J. Kienzle, "Network Applications in Ada 95," in *TRI-Ada '97 Conference*, (St. Louis, MO), pp. 3 – 9, ACM Press, November 1997.

[20] J. Kienzle and A. Strohmeier, "Shared Recoverable Objects," in *4th International Conference on Reliable Software Technologies - Ada-Europe 99, Santander, Spain, June 7-11, 1999* (M. G. Harbour and J. A. de la Puente, eds.), vol. 1622 of *Lecture Notes in Computer Science*, pp. 397 – 411, 1999.

[21] J. Kienzle, "Combining Tasking and Transactions," in *Proceedings of the 9th International Real-Time Ada Workshop, Wakulla Springs Lodge, Tallahassee FL, USA, March 1999*, no. XIX(2) in Ada Letters, pp. 49 – 53, ACM Press, June 1999.

[22] J. Kienzle and A. Romanovsky, "On Persistent and Reliable Streaming in Ada," in *5th International Conference on Reliable Software Technologies - Ada-Europe 2000, Potsdam, Germany, June 26-30, 2000* (H. B. Keller and E. Plöderer, eds.), no. 1845 in Lecture Notes in Computer Science, pp. 82 – 95, 2000.

[23] J. Kienzle and A. Romanovsky, "Combining Tasking and Transactions, Part II: Open Multithreaded Transactions," in *Proceedings of the 10th International Real-Time Ada Workshop, Castillo de Magalia, Las Navas del Marques, Avila, Spain, September 2000*, no. XXI(1) in Ada Letters, pp. 67 – 74, ACM Press, March 2001.

[24] J. Kienzle, "Exception Handling in Open Multithreaded Transactions," in *ECOOP Workshop on Exception Handling in Object-Oriented Systems, Cannes, France*, June 2000.

[25] A. J. Wellings, B. Johnson, B. Sanden, J. Kienzle, T. Wolf, and S. Michell, "Object-Oriented Programming and Protected Objects in Ada 95," in *5th International Conference on Reliable Software Technologies - Ada-Europe 2000, Potsdam, Germany, June 26-30, 2000* (H. B. Keller and E. Plöderer, eds.), no. 1845 in Lecture Notes in Computer Science, pp. 16 – 28, 2000.

[26] J. Kienzle, R. Jiménez-Peris, A. Romanovsky, and M. Patiño-Martinez, "Transaction Support for Ada," in *6th International Conference on Reliable Software Technologies - Ada-Europe 2001, Leuven, Belgium, May 14-18, 2001*, no. 2043 in Lecture Notes in Computer Science, pp. 290 – 304, Springer Verlag, 2001.

[27] X. Caron, J. Kienzle, and A. Strohmeier, "Object-Oriented Stable Storage based on Mirroring," in *6th International Conference on Reliable Software Technologies - Ada-Europe 2001, Leuven, Belgium, May 14-18, 2001*, no. 2043 in Lecture Notes in Computer Science, pp. 278 – 289, Springer Verlag, 2001.

[28] J. Kienzle, A. Romanovsky, and A. Strohmeier, "Open Multithreaded Transactions: Keeping Threads and Exceptions under Control," in *Proceedings of the 6th International Workshop on Object-Oriented Real-Time Dependable Systems, Universita di Roma La Sapienza, Roma, Italy, January 8th - 10th, 2001*, pp. 209 – 217, IEEE Computer Society Press, 2001.

[29] J. Kienzle and A. Romanovsky, "Implementing Exceptions in Open Multithreaded Transactions," in *Workshop on Exception Handling for a 21st Century Programming Language, Leuven, Belgium, May 14th, 2001*, no. XXI(3) in Ada Letters, pp. 57 – 63, ACM Press, September 2001.

[30] J. Kienzle and R. Guerraoui, "AOP - Does It Make Sense? The Case of Concurrency and Failures," in *16th European Conference on Object–Oriented Programming – ECOOP 2002* (B. Magnusson, ed.), no. 2374 in Lecture Notes in Computer Science, (Malaga, Spain), pp. 37 – 61, Springer Verlag, 2002.

[31] J. Kienzle, A. Romanovsky, and A. Strohmeier, "Auction System Design Using Open Multithreaded Transactions," in *Proceedings of the 7th International Workshop on Object-Oriented Real-Time Dependable Systems, San Diego, California, USA, January 7th - 9th, 2002*, (Los Alamitos, CA), pp. 95 – 104, IEEE Computer Society Press, 2002.

[32] J. Kienzle, "Software Fault Tolerance: An Overview," in *8th International Conference on Reliable Software Technologies - Ada-Europe 2003, Toulouse, France, June 16-20, 2003* (J.-P. Rosen and A. Strohmeier, eds.), vol. 2655 of *Lecture Notes in Computer Science*, pp. 45–67, Springer Verlag, 2003.

[33] R. Silaghi, A. Strohmeier, and J. Kienzle, "Porting OMTTs to CORBA," in *Proceedings of the 5th International Symposium on Distributed Objects and Applications (DOA), Catania, Sicily, Italy, November 3-7, 2003*, vol. 2888 of *Lecture Notes in Computer Science*, pp. 1521–1542, Springer Verlag, 2003.

[34] S. Mustafiz and J. Kienzle, "A Survey of Software Development Approaches Addressing Dependability," in *Scientific Engineering of Distributed Java Applications - FIDJI 2004, Luxembourg, November 24-25, 2004* (A. R. Nicolas Guelfi, Gianna Reggio, ed.), no. 3409 in Lecture Notes in Computer Science, pp. 78–90, Springer Verlag, February 2005.

[35] A. Shui, S. Mustafiz, and J. Kienzle, "Exceptional Use Cases," in *8th International Conference on Model Driven Engineering Languages and Systems - MoDELS 2005, Montego Bay, Jamaica, Oct. 2-7, 2005*, no. 3713 in Lecture Notes in Computer Science, (Montego Bay, Jamaica), pp. 568 – 583, Springer Verlag, October 2005.

[36] M. Zia, S. Mustafiz, H. Vangheluwe, and J. Kienzle, "A Modelling and Simulation Based Approach to Dependable System Design," in *8th International Conference on Model Driven Engineering Languages and Systems - MoDELS 2005, Montego Bay, Jamaica, Oct. 2-7, 2005*, no. 3713 in Lecture Notes in Computer Science, (Montego Bay, Jamaica), pp. 217 – 231, Springer Verlag, October 2005.

[37] H. Vangheluwe, W. Xu, and J. Kienzle, "Modelica for the Generation of Physically Realistic Game Code," in *1st International North American Conference on Intelligent Games and Simulation – GameOn'NA 2005*, p. 55, Eurosis, August 2005.

[38] J. Kienzle and S. Gélineau, "AO Challenge: Implementing the ACID Properties for Transactional Objects," in *Proceedings of the 5th International Conference on Aspect-Oriented Software Development - AOSD 2006, March 20 - 24, 2006*, pp. 202 – 213, ACM Press, March 2006.

[39] M. Monod, J. Kienzle, and A. Romanovsky, "Looking Ahead in Open Multithreaded Transactions," in *Proceedings of the 9th International Symposium on Object and Component-Oriented Real-Time Distributed Computing*, pp. 53 – 63, IEEE Press, April 2006.

[40] S. Mustafiz, X. Sun, J. Kienzle, and H. Vangheluwe, "Model-Driven Assessment of Use Cases for Dependable Systems," in *9th International Conference on Model Driven Engineering Languages and Systems - MoDELS 2006, Genova, Italy, Oct. 1-6, 2006*, no. 4199 in Lecture Notes in Computer Science, pp. 558 – 573, Springer Verlag, October 2006.

[41] A. Denault, H. Vangheluwe, and J. Kienzle, "Model-Based Design of Game AI," in *2nd International North American Conference on Intelligent Games and Simulation – GameOn'NA 2006*, pp. 67 – 71, Eurosis, September 2006.

[42] A. Denault and J. Kienzle, "Minueto – Student Software Engineering Courses Become Fun," in *Proceedings of FuturePlay 2006, London, Ontario*, October 2006.

[43] J. Kienzle and S. Sendall, "Addressing Concurrency in Object-Oriented Software Development," in *Proceedings of CASCON 2006, Toronto, Canada*, pp. 189 – 203, October 2006.

[44] J.-S. Boulanger, J. Kienzle, and C. Verbrugge, "Comparing Interest Management Algorithms for Massively Multiplayer Games," in *Proceedings of Netgames 2006: 5th Workshop on Network and System Support for Games*, pp. 1 – 12, October 2006.

[45] J. Kienzle, A. Denault, and H. Vangheluwe, "Model-based Design of Computer-Controlled Game Character Behavior," in *10th International Conference on Model Driven Engineering Languages and Systems - MoDELS 2007, Nashville, TN, USA, Oct. 1-5, 2007*, no. 4735 in Lecture Notes in Computer Science, pp. 650 – 665, Springer Verlag, October 2007.

[46] F. Gómez, I. Khoury, J. Kienzle, E. McLeish, A. Melvin, R. Pérez-Fernández, D. Rappaport, and G. Toussaint, "Mathematical Models for Binarization and Ternarization of Musical Rhythms," in *BRIDGES: Mathematical Connections in Art, Music and Science*, (San Sebastián, Spain, July 24 - 27), pp. 99 – 108, 2007.

[47] J. Klein and J. Kienzle, "Reusable Aspect Models," in *11th Aspect-Oriented Modeling Workshop, Nashville, TN, USA, Sept. 30th, 2007*, September 2007.

[48] J. Kienzle, J. Gray, D. Stein, W. Cazzola, O. Aldawud, and T. Elrad, "11th International Workshop on Aspect-Oriented Modeling," in *Models in Software Engineering*, no. 5002 in Lecture Notes in Computer Science, pp. 1 – 6, Springer Verlag, June 2008.

[49] J. Kienzle, "On Exceptions and the Software Development Life Cycle," in *4th International Workshop on Exception Handling – WEH '08*, (New York, NY, USA), pp. 32–38, ACM, November 2008.

[50] S. Mustafiz, J. Kienzle, and A. Berlizev, "Addressing Degraded Service Outcomes and Exceptional Modes of Operation in Behavioural Models," in *International Workshop on Software Engineering for Resilient Systems – SERENE '08*, (New York, NY, USA), pp. 19 – 28, ACM, November 2008.

[51] A. Denault, J. Kienzle, and J. Vybihal, "Be a Computer Scientist for a Week: The McGill Game Programming Guru Summer Camp," in *38th ASEE/IEEE Frontiers in Education Conference – FIE '08*, pp. 1 – 6, IEEE Press, October 2008.

[52] J. Kienzle, W. Al Abed, and J. Klein, "Aspect-Oriented Multi-View Modeling," in *Proceedings of the 8th International Conference on Aspect-Oriented Software Development - AOSD 2009, March 1 - 6, 2009*, pp. 87 – 98, ACM Press, March 2009.

[53] J. Kienzle, C. Verbrugge, B. Kemme, A. Denault, and M. Hawker, "Mammoth: A Massively Multiplayer Game Research Framework," in *4th International Conference on the Foundations of Digital Games – ICFDG*, (New York, NY, USA), pp. 308 – 315, ACM Press, April 2009.

[54] W. Al Abed and J. Kienzle, "Information Hiding and Aspect-Oriented Modeling," in *14th Aspect-Oriented Modeling Workshop, Denver, CO, USA, Oct. 4th, 2009*, pp. 1–6, October 2009.

[55] S. Mustafiz, J. Kienzle, and H. Vangheluwe, "Model transformation of dependability-focused requirements models," in *Workshop on Modeling in Software Engineering, MiSE 2009*, (New York, NY, USA), pp. 50 – 55, ACM, 2009.

[56] J. Klein, J. Kienzle, B. Morin, and J.-M. Jézéquel, "Aspect Model Unweaving," in *12th International Conference on Model Driven Engineering Languages and Systems - MoDELS 2009, Denver, Colorado, USA, Oct. 4 - 9th, 2009*, no. 5795 in Lecture Notes in Computer Science, pp. 514 – 529, Springer Verlag, October 2009.

[57] A. Denault and J. Kienzle, "The Perils of Using Simulations to Evaluate Massively Multiplayer Online Game Performance," in *DIstributed SImulation and Online gaming, DISIO 2010, Torremolinos, Malaga, Spain - March 15, 2010*, pp. 1–8, ACM Press, March 2010.

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[63] G. Mussbacher, J. Kienzle, and D. Amyot, "Transformation of Aspect-oriented Requirements Specifications for Reactive Systems into Aspect-oriented Design Specifications," in *Proceeding of the Model-Driven Requirements Engineering Workshop 2011*, pp. 39–47, IEEE Xplore, August 2011.

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[74] C. Dragert, J. Kienzle, and C. Verbrugge, "Statechart-based ai in practice," in *8th Artificial Intelligence and Interactive Digital Entertainment Conference - AIIDE 2012*, AAAI Publications, 2012.

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[83] M. Schöttle and J. Kienzle, "On the challenges of composing multi-view models," in *Proceedings of the First Workshop On the Globalization of Modeling Languages, GeMOC 2013*, vol. 1102 of *CEUR Workshop Proceedings*, pp. 1 – 6, 2013.

[84] J. Kienzle, "Reusing Software Design Models with TouchRAM," in *Companion Proceedings of the 12th International Conference on Aspect-Oriented Software Development*, AOSD '13 Companion, (New York, NY, USA), pp. 23–26, ACM, March 2013.

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[91] C. Cañas, K. Zhang, B. Kemme, J. Kienzle, and A. Jacobsen, "Publish/subscribe network designs for multiplayer games," in *Proceedings of the ACM/IFIP/USENIX 15th International Middleware Conference*, (New York, NY, USA), pp. 241–252, Springer, 2014.

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[93] N. Thimmegowda and J. Kienzle, "Visualization Algorithms for Feature Models in Concern-Driven Software Development," in *Companion Proceedings of the 14th International Conference on Modularity, MODULARITY 2015, Fort Collins, CO, USA, March 16 - 19, 2015*, pp. 39–42, 2015.

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[95] H. Khan, J. Gascon-Samson, J. Kienzle, and B. Kemme, "Monitoring large-scale location-based information systems," in *29th International Parallel and Distributed Processing Symposium – IPDPS 2015*, IEEE, to appear.

[96] J. Gascon-Samson, F.-P. Garcia, B. Kemme, and J. Kienzle, "Dynamoth: A scalable pub/sub middleware for latency-constrained applications in the cloud," in *35th International Conference on Distributed Computing Systems – ICDCS 2015*, IEEE, to appear.

Thesis and Refereed Poster Presentations

[97] J. Kienzle, "Network Applications in Ada 95," Master's thesis, Swiss Federal Institute of Technology, Lausanne, Switzerland, March 1997.

[98] J. Kienzle, *Open Multithreaded Transactions: A Transaction Model for Concurrent Object-Oriented Programming*. PhD thesis, Swiss Federal Institute of Technology, Lausanne, Switzerland, April 2001.

[99] J. Kienzle, "Object Persistence: A Framework Based on Design Patterns." Poster presented at the 14th European Conference on Object–Oriented Programming – ECOOP 2000, Cannes, France, June 2000.

[100] C. Cañas, K. Zhang, B. Kemme, J. Kienzle, and H.-A. Jacobsen, "A publish/subscribe network engine testbed for multiplayer games," in *Proceedings of the Posters & Demos Session*, Middleware Posters and Demos '14, (New York, NY, USA), pp. 19–20, ACM, 2014.

Technical Reports and Other Unrefereed Publications

[101] Y. Yu, A. Bachand, and J. Kienzle, "Comparing Different AOP Approaches," Tech. Rep. SOCS-TR-2004.7, McGill University, Montreal, Canada, November 2004.

[102] J. Kienzle and S. Sendall, "Addressing Concurrency in Object-Oriented Software Development," Tech. Rep. SOCS-TR-2004.8, McGill University, Montreal, Canada, December 2004.

[103] D. Stein, J. Kienzle, and M. Kandé, "5th International Workshop on Aspect-Oriented Modeling," in *UML Modeling Languages and Applications*, no. 3297 in Lecture Notes in Computer Science, pp. 13 – 22, Springer Verlag, February 2005.

[104] J. Kienzle, J. Gray, and D. Stein, "Report of the 7th International Workshop on Aspect-Oriented Modeling," in *Satellite Events at the MoDELS 2005 Conference, Montego Bay, Jamaica, October 2-9, 2005*, no. 3844 in Lecture Notes in Computer Science, pp. 91 – 99, Springer Verlag, January 2006.

[105] S. Mustafiz and J. Kienzle, "Addressing Dependability in Use Case Driven Requirements Elicitation," Tech. Rep. SOCS-TR-2006.3, McGill University, Montreal, Canada, February 2006.

[106] J. Kienzle, A. Denault, and J. Vybihal, "Be a Computer Scientist for a Week The McGill – Game Programming Guru Summer Camp," Tech. Rep. SOCS-TR-2006.4, Montreal, Canada, August 2006.

[107] J. Kienzle, D. Stein, W. Cazzola, J. Gray, O. Aldawud, and T. Elrad, "9th International Workshop on Aspect-Oriented Modeling," in *MoDELS 2006 Satellite Events Proceedings, Genova, Italy, October 1-8, 2006*, no. 4364 in Lecture Notes in Computer Science, pp. 1 – 5, Springer Verlag, February 2006.

[108] E. Duala-Ekoko and J. Kienzle, "AOP Challenge Part II: Lessons Learnt from Implementing a Reusable Aspect Framework," Tech. Rep. SOCS-TR-2007.1, McGill University, Montreal, Canada, February 2007.

[109] J. Kienzle and G. Bölükbaşi, "AspectOPTIMA: An Aspect-Oriented Framework for the Generation of Transaction Middleware," Tech. Rep. SOCS-TR-2008.4, McGill University, Montreal, Canada, December 2008.

[110] A. Denault, J. Kienzle, C. Dionne, and C. Verbrugge, "Object-oriented Network Middleware for Massively Multiplayer Online Games," Tech. Rep. SOCS-TR-2008.5, McGill University, Montreal, Canada, December 2008.

[111] J. Kienzle, N. Guelfi, and S. Mustafiz, "Crisis Management Systems – A Case Study for Aspect-Oriented Modeling," Tech. Rep. SOCS-TR-2009.3, McGill University, Montreal, Canada, February 2009.

[112] E. Syriani, J. Kienzle, and H. Vangheluwe, "Exceptional Transformations," Tech. Rep. SOCS-TR-2010.2, McGill University, Montreal, Canada, January 2010.

[113] C. Dragert, J. Kienzle, H. Vangheluwe, and C. Verbrugge, "Generating Extras: Procedural AI with Statechart," Tech. Rep. SOCS-TR-2011.1, McGill University, Montreal, Canada, March 2011.

[114] G. Mussbacher and J. Kienzle, "Integrating Aspect-Oriented Requirements and Design Models with AoURN and RAM," Tech. Rep. SOCS-TR-2011.2, McGill University, Montreal, Canada, April 2011.

[115] C. Dragert, J. Kienzle, and C. Verbrugge, "Reusable Components for Artificial Intelligence in Computer Games," Tech. Rep. SOCS-TR-2011.3, McGill University, Montreal, Canada, July 2011.

Conference Keynote Speeches

- **Conférence en Ingénierie du Logiciel / Génie de la Programmation et du Logiciel – CIEL / GPL 2012**
  "Model Reuse: A Success, the Vision and an Illustrating Example", Rennes, June 2012.
- **Engineering of Fault-Tolerant Systems – EFTS 2006**
  "Exceptions and the Software Lifecycle: Starting with Requirements", Luxembourg Yes, June 2006.
- **8th International Conference on Reliable Software Technologies, Ada-Europe 2003**
  "Software Fault Tolerance: An Overview", Toulouse, France, June 2003.

Panels

- **"Models – DOs and DONTS",** 13th International Conference on Model Driven Engineering Languages and Systems – **MoDELS 2010**, Oslo, Norway, October 2010.

Consulting / Tutorials

- October 2012: "Concern-Driven Development: Tool Supported Transformation of Requirements Models to Design Models", 3 hour tutorial at the 15th International Conference on Model Driven Engineering Languages and Systems – MODELS 2012, Innsbruck, Austria.
- September 2012: "Requirements Reuse with Concern-Driven Development", 3 hour tutorial at the 20th International Requirements Engineering Conference – RE 2012, Chicago, USA.
- August 2012: "Concern-Driven Development", 3 hour tutorial, Ottawa University, Ottawa, Canada.
- June 2006: "Software Fault Tolerance: An Overview", 3 hours tutorial, University of Luxembourg, Luxembourg.
- **Canadian Defence Research and Development**
  2-day Tutorial on Software Fault Tolerance, Valcartier, Quebec, Canada, December 2005.
- **Laboratory for Advanced Software Systems**
  Half-day Tutorial on Software Fault Tolerance, University of Luxembourg, Luxembourg, November 2004.

Invited Talks **(not including conference paper presentation talks)**

- "Concern-Driven Development: The Vision", 1st CORE Workshop, Bellairs Research Institute, Barbados, February 1st 2015.
- "Concern-Driven Development", LATECE Seminar, Université du Quebec a Montreal, November 26th, 2014.
- "Model Interfaces", 5th Bellairs Workshop on Modeling, Bellairs Research Institute, Barbados, February 9th 2013.
- "CORE Models of the bCMS", 4th Workshop on Aspect-Oriented Modeling, Bellairs Research Institute, Barbados, April 29th 2012.
- "From Aspect-Oriented Requirements Models to Aspect-Oriented Design Models", 3rd Workshop on Aspect-Oriented Modeling, Bellairs Research Institute, Barbados, April 17th 2011.
- "Aspect-Oriented Design of a Crisis Management System", 2nd Workshop on Aspect-Oriented Modeling, Bellairs Research Institute, Barbados, April 12th 2010.

- "Aspect-Oriented Design of a Crisis Management System", 14th Workshop on Aspect-Oriented Modeling, Denver, Colorado, USA, October 4th 2009.
- "Aspect-Oriented Multi-View Modeling", Canadian Undergraduate Software Engineering Conference (CUSEC 2009), Montreal, Canada, January 2009.
- "Aspect-Oriented Multi-View Modeling", Computing Department, Lancaster University, Lancaster, UK, December 2008.
- "Aspect-Oriented Multi-View Modeling", Laboratory for Advanced Software Systems, University of Luxembourg, Luxembourg, December 2008.
- "Aspect-Oriented Multi-View Modeling", CORRECT Workshop, Newcastle Upon Type, UK, November 2008.
- "Overview of AspectOPTIMA", Laboratory for Advanced Software Systems, University of Luxembourg, Luxembourg, June 2007.
- "Dependability-Driven Requirements Engineering with Use Cases", Laboratory for Advanced Software Systems, University of Luxembourg, Luxembourg, May 2007.
- "Aspects of Aspect-Orientation", Workshop on Computer Automated Multi-Paradigm Modeling (CAMPaM), Bellairs Research Institute, Barbados, April 2007.
- "Aspect Oriented Challenge: Implementing the ACID properties for Transactional Objects", Dagstuhl Seminar on "Atomicity: A Unifying Concept in Computer Science", Dagstuhl, Germany, March 2006.
- "AO Case Study: Implementing the ACID properties for Transactional Objects", Aspect-Orientation Workshop, CASCon, Toronto, Canada, October 2005.
- "Mammoth, a Massively Multiplayer Game Research Framework", 1st International North American Conference on Intelligent Games and Simulation – GameOn'NA 2005, Montreal, Canada, August 2005.
- "Massively Multiplayer Games", McGill Bellairs Computer Games Workshop, Barbados, March 2005.
- "Addressing Concurrency During Software Development", Dagstuhl Seminar on "Atomicity in System Design and Execution", Dagstuhl, Germany, April 2004.
- "Looking Ahead in Open Multithreaded Transactions", Dagstuhl Seminar on "Atomicity in System Design and Execution", Dagstuhl, Germany, April 2004.
- "Separating Concurrency and Failure Concerns Using Aspect-Oriented Programming Techniques", **IBM T.J. Watson Research Center**, New York, USA, March 2003.
- "Separating Concurrency and Failure Concerns using Aspect-Oriented Programming", Département d'Informatique et de Recherche Opérationnelle, Université de Montréal, February 2003.
- "On Composition and Reuse of Aspects", Workshop on Foundations of Aspect-Oriented Languages, International Conference on Aspect-Oriented Software Development – AOSD 2003, Boston, USA, March 2003.

Professional Activities

Editor

- Special Issue with extended versions of the best papers of Modularity:AOSD 2013 of the Journal Transactions on Aspect-Oriented Software Development – TAOSD, volume 11, 2014, Spinger, April 2014.
- Conference Proceedings of Modularity:AOSD 2013, the 11th International Conference on Aspect-Oriented Software Development, Fukuoka, Japan, March 24th - 29th, 2013.
- Associate Editor of the Software and Systems Modelling Journal – SoSyM since 2012.

- "Models in Software Engineering", best papers of the workshops of the 15th International Conference on Model Driven Engineering Languages and Systems – MODELS 2011, LNCS volume 7167, Springer, March 2012.
- Special Issue on "A Common Case Study for Aspect-Oriented Modeling" of the Journal Transactions on Aspect-Oriented Software Development – TAOSD, volume 7, 2010.
- Editor of a Special Issue of the Journal of Object Technology on "Aspect-Oriented Modeling", JOT Volume 6, Number 7, August 2007.

Organizing Committees

- 1st Concern-Oriented Reuse Workshop at Bellairs, McGill Bellairs Research Institute, Barbados, January 30th - February 6th 2015.
- "Modelling Outside the Box" Panel at the 17th International Conference on Model Driven Engineering Languages and Systems – MODELS 2014, Valencia, Spain, 2014.
- 1st Modeling Outside the Box Workshop at Bellairs, McGill Bellairs Research Institute, Barbados, February 7th - February 14th 2014.
- 4th Workshop on Comparing Modelling Approaches – CMA 2013, Miami, Florida, October 1st, 2013.
- **Tutorial Chair** of the 16th International Conference on Model Driven Engineering Languages and Systems – MODELS 2013, Miami, Florida, Septembet 29th - October 4th, 2013.
- **Program Chair** of Modularity:AOSD 2013, the 11th International Conference on Aspect-Oriented Software Development, Fukuoka, Japan, March 24th - 29th, 2013.
- 5th International Workshop on Exception Handling – WEH 2012, June 9th, 2012.
- 5th Modeling Workshop at Bellairs, McGill Bellairs Research Institute, Barbados, February 8th - February 15th 2013.
- 2nd Workshop on Comparing Modelling Approaches – CMA 2012, Innsbruck, Austria, September 30th, 2012.
- 4th Aspect-Oriented Modeling Workshop at Bellairs, McGill Bellairs Research Institute, Barbados, April 28th - May 3rd 2012.
- International Workshop on Next Generation Modularity Approaches for Requirements and Architecture – NEMARA, Potsdam, Germany, March 25th, 2012.
- **Workshop Chair** of the 14th International Conference on Model Driven Engineering Languages and Systems – **MoDELS 2011**, Wellington, New Zealand, October 16th - 21st, 2011.
- 3rd Aspect-Oriented Modeling Workshop at Bellairs, McGill Bellairs Research Institute, Barbados, April 15th - April 22nd 2011.
- 2nd Aspect-Oriented Modeling Workshop at Bellairs, McGill Bellairs Research Institute, Barbados, April 11th - April 18th 2010.
- 1st Aspect-Oriented Modeling (AOM) Workshop at Bellairs, McGill Bellairs Research Institute, Barbados, April 5th - April 12th 2009.
- 4th International Workshop on Exception Handling, WEH'08, co-located with FSE 2008, Atlanta, Georgia, November 14th 2008.
- Aspect-Oriented Modeling (AOM) Workshops Series
  I have been the co-organizer of 15 workshops on aspect-oriented modeling [103, 104, 107]. The series started at the first International Conference on Aspect-Oriented Software Development, Enschede, The Netherlands, 2002, and has continued ever since. The workshop is usually held biannually, one at the AOSD conference and the other one at the UML/MoDELS conference, since the workshop is intended to bridge the two communities.

  - 1st Workshop on Aspect-Oriented Modeling with UML, co-located with AOSD 2002, Enschede, The Netherlands, April 2002.
  - 2nd Workshop on Aspect-Oriented Modeling with UML, co-located with UML 2002, Dresden, Germany, September 2002.
  - 3rd Workshop on Aspect-Oriented Modeling with UML, co-located with AOSD 2003, Boston, MA, USA, March 2003.
  - 4th Workshop on Aspect-Oriented Modeling with UML, co-located with UML 2003, San Francisco, CA, USA, September 2003.
  - 5th Workshop on Aspect-Oriented Modeling, co-located with UML 2004, Lisbon, Portugal, September 2004 [103].
  - 6th Workshop on Aspect-Oriented Modeling, co-located with AOSD 2005, Chicago, IL, USA, March 2005.
  - 7th Workshop on Aspect-Oriented Modeling, co-located with MoDELS 2005, Montego Bay, Jamaica, September 2005 [104].
  - 8th Workshop on Aspect-Oriented Modeling, co-located with AOSD 2006, Bonn, Germany, March 2006.
  - 9th Workshop on Aspect-Oriented Modeling, co-located with MoDELS 2006, Genova, Italy, September 2006 [107].
  - 10th Workshop on Aspect-Oriented Modeling, co-located with AOSD 2007, Vancouver, BC, Canada, March 2007.
  - 11th Workshop on Aspect-Oriented Modeling, co-located with MoDELS 2007, Nashville, TN, USA, September 2007 [48].
  - 12th Workshop on Aspect-Oriented Modeling, co-located with AOSD 2008, Brussles, Belgium, April 1st, 2008.
  - 13th Workshop on Aspect-Oriented Modeling, co-located with AOSD 2009, Charlottesville, Virginia, USA, March 2nd, 2009.
  - 14th Workshop on Aspect-Oriented Modeling, co-located with MoDELS 2009, Denver, Colorado, USA, October 4th, 2009.
  - 15th Workshop on Aspect-Oriented Modeling, co-located with MoDELS 2010, Oslo, Norway, October 4th, 2010.

- 4th North American Conference on Intelligent Games and Simulation – GameOn'NA 2008, Montreal, Canada, August 2008.
- 1st North American Conference on Intelligent Games and Simulation – GameOn'NA 2005, Montreal, Canada, August 2005.
- McGill Bellairs Computer Games Workshop, McGill Bellairs Research Institute, Barbados, March 27th - April 3rd 2005.
- Workshop on Exception Handling for 21st Century Programming Languages, collocated with the 6th International Conference on Reliable Software Technologies - Ada-Europe 2001, Leuven, Belgium, May 2000.

Conference Program Committees

- 17th International Conference on Model Driven Engineering Languages and Systems – **MoDELS 2014**, Valencia, Spain, September 28th - October 3rd, 2014.
- 28th European Conference on Object-Oriented Programming – ECOOP, Uppsala, Sweden, July 28th - August 1st, 2014.
- Dependable and Adaptive Distributed Systems – DADS 2012, part of the 27th ACM Symposium on Applied Computing – SAC'12, Riva del Garda, Trento, Italy, March 25th - 29th, 2012.

- 14th International Conference on Model Driven Engineering Languages and Systems – **MoDELS 2011**, Wellington, New Zealand, October 16th - 21st, 2011.
- 7th European Conference on Modelling Foundations and Applications – ECMFA 2011, Birmingham, UK, June 6th - 9th, 2011.
- 13th International Conference on Model Driven Engineering Languages and Systems – **MoDELS 2010**, Oslo, Norway, October 2010.
- Sixth European Conference on Modelling Foundations and Applications – ECMFA 2010, Paris, France, June 15th - 18th, 2010.
- 5th North American Conference on Intelligent Games and Simulation – GameOn'NA 2009, Atlanta, USA, August 26th - 28th, 2009.
- 4th International Conference on E-Learning and Games – Edutainment 2009, August 9-11, 2009, Banff, Canada.
- FuturePlay 2007, Toronto, Canada, November 2007.
- 10th International Conference on Model Driven Engineering Languages and Systems – **MoDELS 2007**, Nashville, TN, USA, October 2007.
- 12th International Conference on Reliable Software Technologies – Ada-Europe 2007, Geneva, Switzerland, June 2007.
- FuturePlay 2006, October 2006.
- 9th International Conference on Model Driven Engineering Languages and Systems – **MoDELS 2006**, Genova, Italy, October 2006.
- 11th International Conference on Reliable Software Technologies – Ada-Europe 2006, Porto, Portugal, June 2006.
- Engineering of Fault-Tolerant Systems – EFTS 2006, Luxembourg, June 2006.
- Fifth International Conference on Aspect-Oriented Software Development – **AOSD 2006**, Bonn, Germany, March 2006.
- 10th International Conference on Reliable Software Technologies – Ada-Europe 2005, York, UK, June 2005.
- 7th International Conference on the Unified Modeling Language – **UML 2004**, Lisbon, Portugal, October 2004.
- 9th International Conference on Reliable Software Technologies – Ada-Europe 2004, Palma de Mallorca, Spain, June 2004.
- 8th International Conference on Reliable Software Technologies – Ada-Europe 2003, Toulouse, France, June 2003.
- 7th International Symposium on Distributed Objects and Applications – DOA 2002, Irvine, CA, USA, October 2002.
- 6th International Conference on Reliable Software Technologies – Ada-Europe 2002, Vienna, Austria, June 2002.
- 5th International Conference on Reliable Software Technologies – Ada-Europe 2001, Leuven, Belgium, May 2001.

Workshop Program Committees

- Model-Driven Requirements Engineering Workshop – MoDRE 2014, Karlskrona, Sweden, August 25th 2014.
- 5th International Workshop on Software Engineering for Resilient Systems – SERENE 2013, Kiev, Ukraine, October 3rd - 4th, 2013.

- International Workshop on The Globalization of Modeling Languages – GEMOC 2013, September 29, 2013, Miami, Florida, USA.
- 3rd Workshop on Comparing Requirements Modelling Approaches, Rio de Janeiro, Brazil, July 16th, 2013.
- 1st Workshop on View-Based, Aspect-Oriented and Orthographic Software Modelling – VAO 2013, Montpellier, France, July 2nd, 2013.
- 5th Workshop on Behavioural Modelling - Foundations and Applications – BM-MFA 2013, Montpellier, France, July 2nd, 2013.
- 3rd International Workshop on Software Engineering for REsilient SystEms – SERENE 2011, Geneva, Switzerland, September, 2011.
- Model-Driven Requirements Engineering Workshop – MoDRE 2011, August 2011.
- 3rd Workshop on Behavioural Modelling - Foundations and Applications, Birmingham, UK, June 6th, 2011.
- 1st Workshop on Exception Handling in Contemporary Software Systems – EHCoS, São Paulo, Brazil, April 25th, 2011.
- First International Workshop on Dependable Services and Systems – IWoDSS 2010, Montreal, Canada, May 17th - May 18th, 2010.
- 2nd International Workshop on Software Engineering for REsilient SystEms (SERENE 2010), Birkbeck College, London, UK, April 13th - April 16th, 2010.
- First International Workshop on Composition: Objects, Aspects, Components, Services and Product Lines – Composition & Variability – VariComp 2010, Rennes, France, March 15th 2010.
- 8th Workshop on Aspects, Components, and Patterns for Infrastructure Software – AC4PIS 2009, co-located with the 8th International Conference on Aspect-Oriented Software Development, Charlottesville, Virginia, USA, March 2nd 2009.
- International Workshop on Software Engineering for REsilient SystEms (SERENE 2008), Newcastle upon Tyne, United Knigdom, November 17 - 19, 2008.
- 2nd International Workshop on Aspects, Dependencies and Interactions, co-located with the 21st European Conference on Object-Oriented Programming, Berlin, Germany, July 2007.
- Next Generation Aspect Oriented Middleware Workshop (NAOMI 2008), Brussels, Belgium, March 2008.
- 1st Technical Session on Engineering of Software Fault-Tolerance – EngSoFT 2007, co-located with the 2007 International Conference on Software Engineering Research and Practice, Las Vegas, Nevada, USA, June 2007.
- 1st International Workshop on Aspects, Dependencies and Interactions, co-located with the 20th European Conference on Object-Oriented Programming, Nantes, France, July 2006.
- 4th International Workshop on Scientific Engineering of Distributed Java Applications – FIDJI 2004, Luxembourg, November 2004.

Other Refereeing

- 1 Grant Review for The Netherlands Organisation for Scientific Research (NWO), The Netherlands.
- 1 Grant Review for the Austrian Science Foundation (FWF), Austria.
- 8 NSERC Discovery Grant Reviews, National Sciences and Engineering Research Council, Canada.
- "Bourse de Formation-Recherche", Department of Scientific Research and Applied Research of the Ministry of Culture, Higher Education and Research of Luxembourg, Luxembourg
- Project Grant Review for the Fond National du Luxembourg, Luxembourg
- Reviewed 12 proposals for the McGill Collaborative Research Development Seed Fund (for the OVPRIR)

- 2 Articles for the ACM Transactions on Programming Languages and Systems Journal (TOPLAS)
- 9 Articles for the Transactions on Aspect-Oriented Software Development Journal (TAOSD)
- 6 Articles for the Software and Systems Modeling Journal (SoSyM)
- 3 Articles for the Software Practice and Experience Journal (SP&E)
- 3 Articles for the Journal of Object Technology (JOT)
- 1 Article for the Transactions on Dependable and Secure Computing Journal (TDSC)
- 2 Articles for the Transactions on Software Engineering Journal (TSE)
- 2 Articles for IEEE Software
- Review of a two book chapters in "Methods, Models and Tools for Fault Tolerance", published by Springer.
- Review of a book chapter in "Engineering of Fault-Tolerant Systems", published by Springer.

Other Professional Activities

- Mentor for the Doctoral Symposium at the 9th International Conference on Model Driven Engineering Languages and Systems – MoDELS 2006, Genova, Italy, October 2006.
- Mentor for the Doctoral Symposium at the 8th International Conference on Model Driven Engineering Languages and Systems – MoDELS 2005, Montego Bay, Jamaica, October 2005.

Graduate Supervision

Supervised Ph.D. Students

2013 - present	Matthias Schöttle: "Practical Concern-Oriented Software Development"
2011 - present	Julien Gascon-Samson: "Massively Multiplayer Game Middleware for the Cloud" (co-supervised with Bettina Kemme)
2011 - present	Omar Alam: "Concern-Oriented Software Development"
2010 - present	Cesar Canas: "Using Publish-Subscribe Middleware for Massively Multiplayer Games" (co-supervised with Bettina Kemme)
2008 - present	Wisam Al Abed: "Reusable Aspect Models"
2008 - 2014	Chris Dragert: "Model-Driven Development of AI for Digital Games" (co-supervised with Clark Verbrugge)
2006 - 2010	Alexandre Denault: "Journey, A Shared Virtual Space Middleware"
2004 - 2010	Sadaf Mustafiz: "Dependability-Driven Requirements Engineering for Reactive Systems"

Supervised Master Students

2014 - present	Celine Bensoussan: "Aspect-Oriented Model-to-Code Transformation"
2014 - present	Nishanth Thimmegowda: "Feature-Oriented Concern Composition"
2014 - 2014	Thomas Di'Meco: "Object-Oriented Code Generation for TouchRAM"
2014 - 2014	Laura Martellotto: "OCL-Based Constraint Verification for TouchRAM"

2013 - 2014	Sunit Bhalotia: "Aspect-Oriented Modelling with Instantiation Cardinalities"
2013 - 2014	Jonathan Schoreels: "AI Techniques for Learning NPC Behaviour in Mammoth"
2012 - 2013	Thang Tran: "A Message-View Editor for TouchRAM"
2012 - 2013	Abir Ayed: "Protocol Modelling for Reusable Aspect Models"
2012 - 2013	Emil Dafinov: "Documenting Framework Interfaces with Reusable Aspect Models"
2012 - 2013	Engin Yildirim: "A Multi-Touch Interface for Aspect-Oriented Modelling"
2012 - 2013	Subtain Pervaiz: "Automated Class Diagram Layout for TouchRAM"
2012 - 2012	Matthias Schöttle: "Sequence Diagram Weaving Support for Reusable Aspect Models"
2011 - 2012	Hammad Ullah Khan: "Distributed Monitoring of Virtual Worlds"
2011 - 2012	Marc Shakour: "Comparing Triangle-Based Pathfinding Algorithms"
2010 - 2012	James Jie: "Smooth Camera Movements for Mammoth"
2009 - 2011	Onur Duman: "Account Creation and Login Facilities for Mammoth" (co-supervised with Bettina Kemme)
2009 - 2010	Max Kramer: "Mapping Reuable Aspect Models to Aspect-Oriented Code", exchange student from Karlsruhe Institute of Technology, Germany
2006 - 2010	Samuel Gélineau: "Commutative Composition: a Conservative Approach to Aspect Weaving" (co-supervised with Brigitte Pientka)
2008 - 2009	Yanwar Asrigo: "Communication Middleware for a Web-based Game Lobby" (co-supervised with Clark Verbrugge and Bettina Kemme)
2007 - 2008	Eric Thul: "Measuring the Complexity of Musical Rhythm" (co-supervised with Godfried Toussaint)
2007 - 2008	Dominik Zindel: "Postina, a Publish/Subscribe Middleware for Massively Multiplayer Games", exchange student from the University of Fribourg, Switzerland
2006 - 2008	Michael Hawker: "Consistency of Subgames in Virtual Worlds"
2005 - 2008	Muhammad Jamal Sheik: "Exception Handling in Software Analysis"
2005 - 2007	Jonathan Li On Wing: "Memory for Storing Player Behavior in Massively Multiplayer Games" (co-supervised with Prof. Doina Precup)
2005 -2007	Adrian Ghizaru: "Learning Player Behavior in Massively Multiplayer Games" (co-supervised with Prof. Doina Precup)
2005 - 2007	Güven Bolukbasi: "AspectOptima: Aspectual Composition of Transaction Models"
2005 - 2007	Xun Zhu: "Ensuring Consistency and Deadlock-Freeness in Concurrent System Designs"
2005 - 2007	Zheng Pan: "Design of an Interactive Multimedia Application for the Redpath Museum Mummy Exhibit"

2004 - 2006 Ekwa Duala-Ekoko: "Evaluating the Expressivity of AspectJ in Implementing a Reusable Framework for the ACID Properties of Transactional Objects"

2004 - 2006 Jean-Sebastien Boulanger: "Interest Management for Massively Multiplayer Games"

2004 - 2006 John Beekler: "Game Consoles on FPGAs" (co-supervised with Warren Gross)

2004 - 2005 Aaron Shui: "Exceptional Use Cases"

2004 - 2005 Alexandre Denault: "Minueto, a Game Development Framework"

2004 - 2005 Maxime Monod: "Looking Ahead in Open Multithreaded Transactions"
(exchange student from the Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland)

2005 Pierre Marieu: "Mammoth: Developing the Logic Engine"
(exchange student from Ecole Centrale de Nantes, France)

2004 - 2005 Sherif Refaat Shaker: "Graphical User Interface Framework for COMP-361"

2004 - 2005 Jianguo Ma: "Evaluation of Different Aspect-Oriented Programming Techniques"

2003 - 2004 Jie Xiong: "Addressing Concurrency using a UML-Based Software Development Method"

2003 - 2004 Roger McFarlane: "Network Software Architecture for Massively Multiplayer Games"

2003 - 2004 Sadaf Mustafiz: "Integrating Fault Tolerance into Software Development: A Comprehensive Survey"

2003 - 2004 Shen Li: "Aspect-Oriented Persistence for Transactional Objects"

2002 - 2003 Xuechun Lu: "Optimistic Concurrency Control for Optima"

Supervised Undergraduate Summer or Semester Projects

Fall 2014 Ashley Kim: "Concern-Oriented Requirements Modelling of the Slot Machine Domain"

Fall 2014 Calem Bendell, COMP-400: "Concern-Oriented Modelling of GUI Framework Interfaces"

Winter 2014 Franz-Philippe Garcia, COMP-400: "Implementation Class Support for TouchRAM"

Winter 2014 Zhenyi Huang, COMP-400: "Multi-touch Enabled File Browser"

Fall 2013/Winter 2014 UbiSoft Game Design Competition Supervision, COMP-396: Shao He, Alexander Selwood, YunJiing Tiang, Louis-Philippe Morel, Jérémie Bédard

Fall 2013 James Thornton, COMP-400: "Message View Editing for TouchRAM"

Fall 2012/Winter 2013 UbiSoft Game Design Competition Supervision, COMP-396: Nicolas Langley, Mehrdad Dehdashti, Nathaniel Blumer

Winter 2013 Benoit Hiller, COMP-396: "Chromium Browser Adaptor for the Eclipse Editor"

Fall 2012 Wesley Ellis, COMP-396: "Automating Test Suite Execution for the ReviewBoard Project"

Winter 2012 Valentin Bonnet, COMP-400: "Migrating the RAM Multi-Touch Tool to MT4J"

Fall 2011	Andrew Smart, COMP-400: "Migrating the RAM Multi-Touch Tool to MT4J"
Fall 2011	Valentin Bonnet, COMP-396: "Parameterizing RAM Parameters"
Summer 2011	Louis-Philippe Thibodeau-Bellemare, NSERC USRA: "Adding Lights and Water to Mammoth"
Summer 2011	Etienne Perot, USRA: "Migrating the Mammoth Graphics to JMonkey 3.0"
Winter 2011	Andrew Smart, COMP-396: "A Multi-Touch Interface for the Reusable Aspect Models Tool"
Winter 2010	Hussein Danish, Hussein Slimani, ECSE-476: "Implementing a Meta Model-Based Graphical Editor in Eclipse - Implementation"
Winter 2010	Max Kramer, COMP-400, "Extending AspectOPTIMA to support Open Multithreaded Transactions"
Winter 2010	Max Kramer, COMP-396, "@AspectOPTIMA - Implementing Reusable Aspect Models in AspectJ"
Fall 2009	Hussein Danish, Hussein Slimani, ECSE-475: "Implementing a Meta Model-Based Graphical Editor in Eclipse - Design"
Winter_2009	Jonathan Pullano: "Triangle-based Path Finding in Mammoth"
Winter 2009	Rob Rolnick, George Ciobanu and Scott McMurray: "Heightmaps for Mammoth - Implementation"
Fall 2008	Rob Rolnick, George Ciobanu and Scott McMurray: "Heightmaps for Mammoth - Design"
Summer 2008	Amy Goldenberg and Ashton Anderson: "Speech Recognition for Mammoth"
Summer 2007	Alexander Thompson: "Delauney Triangularization for Mammoth"
Winter 2007	Ting Sun, ECSE-495: "User Interface Frameworks for OpenGL"
Winter 2007	Wisam Al Abed, ECSE-495: "Porting Feng GUI to Minueto GL"
Winter 2006	Karim El Said, Honors Project: "Web-accessible Study Schedule Planner"
Winter 2006	Michael Hawker, Honors project: "Mammoth - Item Infrastructure and Interface"
Winter 2006	Jeremy Claude, ECSE-495 project: "Mammoth - Content Editor Preview Window"
Winter 2006	Ovidiu Marc, ECSE-495 project: "Mammoth - Item Class Support in the Content Editor"
Winter 2006	Russell Spence, special Joint Physics / Computer Science Project: "Mammoth - Collision Detection in the Physics Engine"
Summer 2005	Samuel Gélineau, NSERC summer student: "Implementing Look-Ahead Support for Optima"
Winter 2005	Albert Bachand, Honors Project: "Comparing AspectJ and Hyper/J"
Winter 2005	David Adler, Honors Project: "Graphical Representation of Program Schedules"
Fall 2004	Marc Boscher, Honors Project: "Web Services on the Browser: an Alternate Web Application Architecture"
Summer 2003	Vikram Shetty, Honors Project: "Extended Study Schedule Planner"
Winter 2003	Caroline Kreuzinger, Honors Project: "Study Schedule Planner"

Service to the University

Department Committees

2002 - present	Software Engineering Committee
2009 - present	Ph.D. Committee
2005 - present	Web Committee
2003 - present	Exchange Student Advisor
2004 - 2010	ACM Programming Contest Team Coach
2004 - 2010	School of Computer Science Colloquium Committee Chair
2003 - 2005	Webmaster
2003	Undergraduate Committee

Quebec Committees

2003 - 2009	Comité consultatif sur la Relève, FQRNT

Other University Activities

2004	Organizer of the ACM Programming Contest Northeast North American Regionals at McGill University
2006	Creator and Organizer of the "Game Programming Guru" Summer Camp, July 2006, McGill University
2008	Organizer of the "Game Programming Guru" Summer Camp, July 2008, McGill University

Thesis Examiner

Internal Examiner Ph.D.

2004	Danielle Azar: "Genetic Algorithms for Building and Improving Software Quality Estimation Models", School of Computer Science, McGill University.
2005	Luz Abril Torres Mendez: "Statistics of Visual and Partial Range Data for Mobile Robot Environment Modeling", School of Computer Science, McGill University.
2007	Carlton Davis: "Security Protocols for Mobile Ad Hoc Networks", School of Computer Science, McGill University.
2007	Yin Lin: "Practical and Consistent Database Replication", School of Computer Science, McGill University.
Sept. 2008	Huaigu Wu: "Adaptable Stateful Application Server Replication", School of Computer Science, McGill University.
Nov. 2009	Eric Bodden: "Verifying finite-state properties of large-scale programs", School of Computer Science, McGill University.

April 2011 Eugene Syriani: "A Multi-Paradigm Foundation for Model Transformation Language Engineering", School of Computer Science, McGill University.

May 2011 Amin Atrash: "A Bayesian Framework for Online Parameter Learning in POMDPs", School of Computer Science, McGill University

June 2014 Amir Yahyavi: "On The Scalability and Security of Distributed Multiplayer Online Games", School of Computer Science, McGill University

External Examiner Ph.D.

Sept. 2008 Farida Mostefaoui: "Un Cadre Formel Pour le Développement Orienté Aspect: Modélisation et Vérification des Interactions due aux Aspect", Département d'Informatique et de Recherche Opérationelle, Université de Montréal.

December 2008 Nelio Cacho: "Supporting Maintainable Exception Handling with Explicit Exception Channels", Computing Department, University of Lancaster, United Kingdom.

October 2009 Dewan Tanvir Ahmed: "Architectural Challenges and Solutions for Peer-to-peer Massively Multiuser Online Games", School of Information Technology and Engineering, University of Ottawa, Canada.

April 2010 Barbara Gallina: "Prisma: a software product line-oriented process for the requirements engineering of flexible transaction models", Faculté des Sciences, de la Technologie et de la Communication, Université du Luxembourg, Luxembourg.

January 2011 Dominik Stein: "Join Point Designation Diagrams: A Visual Design Notation for Join Point Selections in Aspect-Oriented Software Development", Fakultät für Wirtschaftswissenschaften der Universität Duisburg-Essen, Germany.

External Examiner Master Theses

2004 Thomas Feng: "D-Charts, a Formalism for Modeling and Simulation-based Design of Reactive Software Systems", School of Computer Science, McGill University

2004 Spencer Borland: "Transforming Statechart Models to DEVS", School of Computer Science, McGill University

2005 Zeeshan Mohammad Sardar: "Snapshot-based Concurrency Control Protocols for XML", School of Computer Science, McGill University

2005 Christopher Goard: "Measuring and Improving the Runtime Behavior of AspectJ Programs", School of Computer Science, McGill University

2005 Marc Provost: "Himesis: A Hierarchical Subgraph Matching Kernel for Model Driven Development", School of Computer Science, McGill University

2006 Denis Dubé: "Layout in Domain-specific Visual Modelling", School of Computer Science, McGill University

2007 Ximeng Sun: “A Model-Driven Approach to Scenario-Based Requirements Engineering”, School of Computer Science, McGill University

2008 Barthélemy Dagenais: “Recommending Adaptive Changes for Framework Evolution”, School of Computer Science, McGill University

2010 Ching Ling Tom Chen: "Distributed Collision Detection and Resolution", School of Computer Science, McGill University

2010 Kaiwen Zhang: “Persistent Transaction Models for Massively Multiplayer Online Games”, School of Computer Science, McGill University

2011 Xiaoxi Dong: “Ark, the Metamodelling Kernel for Domain Specific Modelling”, School of Computer Science, McGill University

2011 Sanket Manjul Joshipura: “Dynamic Load Balancing Strategies for Multi-Tier e-Commerce Applications”, School of Computer Science, McGill University

2015 Andrew Bodzay: “AspectMatlab++: Developing an Aspect-Oriented Language for Scientists”, School of Computer Science, McGill University