

# Simon Denier, PhD – Resume

## Contact

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## Education

PhD in Computer Science — Université de Nantes (2003–2007).

DEA (Master Degree) in Computer Science — Université de Rennes (2003).

Engineering Degree in Computer Science — INSA de Rennes (1998-2003).

French Baccalauréat with highest honor (mention très bien) (1998).

## Research Experience

### 2008-2010: Postdoctoral Researcher

**INRIA Lille-Nord Europe — RMoD team**

*Subject:* Software Quality Models; Reverse Engineering of Software Architecture; Software Visualization

*Keywords:* Software quality, reverse engineering, metrics, reengineering, software visualization

I am involved in the Squale project for Software QUALity Enhancement, an open-source project mixing industry and academics, supported and labeled by the System@tic Paris-Region competitive cluster. I am involved in refining the models for quality and refactoring with new metrics and strategies [6 ; 3] as well as new visualisations.

### 2007-2008: Postdoctoral Researcher

**Université de Montréal — DIRO — Ptidej team**

*Subject:* Design Patterns Composition; Object-Oriented Program Comprehension and Visualisation

*Keywords:* Design pattern, composition, metrics, object, program analysis, reverse engineering

I focused on two topics in the fields of object-oriented development and reverse

engineering: the characterisation and visualisation of inheritance in object-oriented programs with Mendel, in order to enhance program comprehension [7 ; 5]; the various approaches for detection of design patterns [23], and the use of design patterns detection tools to study and characterize the composition of design patterns, aiming at reverse engineering programs for maintenance (continuity of my PhD thesis [17]).

This work was funded by the Egede Lavoisier fund (2008 laureate), NSERC, and FCI funds (Canada).

## 2003-2007: PhD Student

École des Mines de Nantes / INRIA / LINA — Obasco team

*Title:* Expression and Composition of Design Motifs with Aspects

*Keywords:* Design pattern, motif, implementation, composition, density, object, aspect, programming language

In my PhD thesis, I investigate the composition of design patterns, *i.e.* the implementation of multiple design patterns in the same code location. I define a categorisation of the composition of patterns with respect to their impact on code modularity [8 ; 17]. I demonstrate the use of aspect-oriented solutions to mitigate the difficulties of implementing composition of patterns [1].

## 2002-2003: Master Student

Université de Rennes / Université de Bretagne Sud

Ranked 6<sup>th</sup> out of 50

*Title:* An Hybrid Deliberative/Reactive Architecture with a Reflective Model for Modular Robotics

*Keywords:* Modular robotics, hybrid architecture, reflection, dynamic adaptation

I present in my master thesis the prototype of a reactive architecture based on reflection and asynchronous messaging, for the dynamic adaptation of robot behaviour [10 ; 11].

## Teaching Experience

My teaching activities sum up to 220 hours in tutorials and practical work while at École des Mines de Nantes and Université de Montréal. Table 1 gives details of hours and number of students for each course.

Object-oriented Programming courses included tutorial and practical work from introductory level up to more advanced topics (design patterns, reflective programming). I contributed to new tutorial subjects and courses at École des Mines de Nantes during the years 2004–2005 and 2007.

Software Engineering courses covered a range of topics, from development process, software design and modeling, to design principles and patterns. I managed the tutorials for the main lecture. I designed and supervised a software engineering project for students, introducing them to the basics of reverse engineering and code extension and evolution.

Year	Subject	Nature	Level	Hours	Number of Students
2007–2008	Reflective OO	practical	Master	6	10
2007–2008	Software Engineering SE Project	tutorial	Master	12	37
		tutoring	Master	20	37
2006–2007	Software Engineering Database	lecture	Master	3	11
		tutorial	Bachelor	6,25	22
	Science Project HMI	practical	Bachelor	16,25	22
		tutoring	Introductory	27,5	2×15
2005–2006	Database	practical	Introductory	11,25	17
		tutorial	Bachelor	10	20
	CS Project Student support	practical	Bachelor	15	20
		tutoring	Bachelor	20	4
2004–2005	Data Structure	tutorial	Introductory	1,25	15
		practical	Bachelor	7,5	24
	OO Programming	tutorial	Bachelor	10	24
		practical	Bachelor	10	15
2003–2004	OO Programming	tutorial	Bachelor	20	15
		practical	Bachelor	17,5	2×21
			Bachelor	32,5	2×21

Table 1: Teaching activities

Database courses included tutorial and practical work about data definition and manipulation languages (SQL) as well as database design methodology.

Data Structure included tutorial and practical work about common data structure in computer science and basics of complexity computation.

HMI (Human-Machine Interface) included tutorial and practical work at introductory level, including HMI programming with the Java Swing framework.

## Tutoring

Université de Montréal, 2008: I designed and supervised a programming project for 37 students (in groups of two to four) in the software engineering course.

École des Mines de Nantes, 2007: I tutored 15 students in a science project, mixing mathematics, physics, and computer-based numerical analysis.

École des Mines de Nantes, 2005–2006: I tutored four students designing and implementing a reactive architecture for a robotic contest.

## Publications

### National Journals

- [1] Simon Denier and Pierre Cointe. Expression and Composition of Design Patterns with AspectJ. In Lionel Seinturier, editor, *RSTI - L'Objet*, 12(2-3):41–61. Hermès-Lavoisier, 2006.
- [2] Simon Denier. Traits Programming with AspectJ. In Pierre Cointe and Mario Südholt, editors, *RSTI - L'Objet*, 11(3):69–86. Hermès-Lavoisier, 2005.

## International Conferences with Review Committee

- [3] Karine Mordal-Manet, Françoise Balmas, Simon Denier, Stéphane Ducasse, Harald Wertz, Jannik Laval, Fabrice Bellingard, and Philippe Vaillergues. The Squale Model – A Practice-based Industrial Quality Model. In *ICSM '09: Proceedings of the IEEE International Conference on Software Maintenance*, pages 94–103, Edmonton, Canada, 2009. Short paper.
- [4] Jannik Laval, Simon Denier, Stéphane Ducasse, and Alexandre Bergel. Identifying cycle causes with Enriched Dependency Structural Matrix. In *WCRE '09: Proceedings of the 2009 16th Working Conference on Reverse Engineering*, Lille, France, 2009.
- [5] Simon Denier and Houari Sahraoui. Understanding the Use of Inheritance with Visual Patterns. In James Miller and Rick Selby, editors, *Proceedings of the 3<sup>rd</sup> International Symposium on Empirical Software Engineering and Measurement (ESEM '09)*, pages 79–88. IEEE Computer Society Press, 2009.
- [6] Alexandre Bergel, Simon Denier, Stéphane Ducasse, Jannik Laval, Fabrice Bellingard, Philippe Vaillergues, Françoise Balmas, and Karine Mordal-Manet. SQUALE - Software QUALity Enhancement. In Andreas Winter, Rudolf Ferenc, and Jens Knodel, editors, *Proceedings of the 13<sup>th</sup> European Conference on Software Maintenance and Reengineering*, pages 285–288. IEEE Computer Society Press, 2009. European Projects Track.
- [7] Simon Denier and Yann-Gaël Guéhéneuc. Mendel: A Model, Metrics, and Rules to Understand Class Hierarchies. In René L. Krikhaar, Ralf Lämmel, and Chris Verhoef, editors, *Proceedings of the 16<sup>th</sup> International Conference on Program Comprehension*, pages 143–152. IEEE Computer Society Press, 2008.
- [8] Simon Denier and Pierre Cointe. Understanding Design Patterns Density with Aspects: A Case Study in JHotDraw using AspectJ. In Welf Löwe and Mario Südholt, editors, *Proceedings of the International Workshop on Software Composition (SC'06)*, volume 4089 of *Lecture Notes in Computer Science*, pages 243–258. Springer-Verlag, 2006.
- [9] Pierre Cointe, Hervé Albin-Amiot, and Simon Denier. From (Meta) Objects to Aspects. In Frank de Boer, Marcello Bonsangue, Susanne Graf, and Willem de Roever, editors, *Proceedings of the 3rd International Symposium on Formal Methods for Components and Objects*, volume 3657 of *Lecture Notes in Computer Science*, pages 70–94. Springer-Verlag, 2005.

## National Conferences with Review Committee

- [10] Jacques Malenfant et Simon Denier. Architecture réflexive pour le contrôle de robots modulaires. Jérôme Euzenat et Bernard Carré, éditeurs, *Langages et Modèles à Objets (LMO'04)*, volume 10 de *RSTI - L'Objet*, pages 17–30, 2004. In French.
- [11] Jacques Malenfant et Simon Denier. ARM : un modèle réflexif asynchrone pour les objets répartis et réactifs. Jean-Pierre Briot, éditeur, *Langages et*

*Modèles à Objets (LMO'03)*, volume 9 de *RSTI - L'Objet*, pages 91–103, 2003. In French.

## International Workshops with Review Committee

- [12] Jannik Laval, Simon Denier, Stéphane Ducasse, and Andy Kellens. Supporting Incremental Changes in Large Models. In *Proceedings of ESUG International Workshop on Smalltalk Technologies (IWST 2009)*, Brest, France, 2009.
- [13] Simon Denier, Damien Pollet, and Stéphane Ducasse. Proposals for the Reborn Pharo Developer. In *Proceedings of ESUG International Workshop on Smalltalk Technologies (IWST 2009)*, Brest, France, 2009.

## Others

- [14] Jannik Laval, Simon Denier, and Stéphane Ducasse. Identifying cycle causes with CycleTable. In *FAMOOSr 2009: 3rd Workshop on FAMIX and MOOSE in Software Reengineering*, Brest, France, 2009.
- [15] Simon Denier et Pierre Cointe. À propos du modèle des traits et de sa transposition en Java à l'aide d'AspectJ. *Journée du groupe Objets, Composants et Modèles*, pages 13–18, Lille, France, 2004. In French.

## Proceedings

- [16] Simon Denier and Tudor Gîrba, editors. *Proceedings of the 3rd Workshop on FAMIX and MOOSE in Software Reengineering (FAMOOSr 2009)*, 2009. Collocated with WCRE '09.

## Dissertations

- [17] Simon Denier. *Expression et composition des motifs de conception avec les aspects*. Thèse de doctorat, Université de Nantes, 2007. In French.
- [18] Simon Denier. Architecture hybride délibérative réactive sous modèle réflexif pour robots moléculaires. Thèse de maîtrise, Université de Rennes - INSA de Rennes, 2003. In French.

## Technical Reports

- [19] Karine Mordal-Manet, Françoise Balmas, Simon Denier, Stéphane Ducasse, Harald Wertz, Jannik Laval, Fabrice Bellingard, and Philippe Vaillergues. The Squale Model – A *Practice*-based Industrial Quality Model. Technical report, INRIA Lille Nord Europe, 2009.
- [20] Stéphane Ducasse, Simon Denier, Françoise Balmas, Alexandre Bergel, Jannik Laval, Karine Mordal-Manet, and Fabrice Bellingard. Visualization of Practices and Metrics (Squale Deliverable 1.2). Technical report, INRIA, 2009.

- [21] Françoise Balmas, Alexandre Bergel, Simon Denier, Stéphane Ducasse, Jannik Laval, Karine Mordal-Manet, Hani Abdeen, and Fabrice Bellingard. Software metric for Java and C++ practices (Squale Deliverable 1.1). Technical report, INRIA Lille Nord Europe, 2009.
- [22] Françoise Balmas, Fabrice Bellingard, Simon Denier, Stéphane Ducasse, Jannik Laval, and Karine Mordal-Manet. Practices in the Squale Quality Model (Squale Deliverable 1.3). Technical report, INRIA, 2009.
- [23] Simon Denier, Foutse Khomh, and Yann-Gaël Guéhéneuc. Reverse-Engineering the Literature on Design Patterns and Reverse-Engineering. Technical report EPM-RT-2008-09, DGIGL, École Polytechnique Montréal, 2008.

## Program Committees

PC member for Software Composition (SC 2010).

PC member for 13<sup>th</sup> Workshop on Quantitative Approaches in Object-Oriented Software Engineering (QAOOSE 2010).

PC member for the 16<sup>th</sup> Working Conference on Reverse Engineering (WCRE'09).

## Organising Committees

Co-organiser for FAMOOSr 2010 and DYLA 2010 workshops.

Organising Committee for the WCRE 2009 conference.  
Co-organiser for FAMOOSr 2009 workshop (collocated with WCRE 2009).

Organising Committee for the LMO/CAL 2008 conferences.

Organising and Program Committee for the ECOOP 2006 Doctoral Symposium & PhD Students Workshop.

Student volunteer at the ECOOP 2006 and AOSD 2004 conferences.

## Community Service

I have reviewed papers for the following journals: IEEE Software (special issue on Software Evolution, July/August 2010), L'Objet 2007.

I have reviewed papers for the following conferences: ECOOP 2010, MODELS 2009, LMO 2009, ASE 2008, CARI 2008, ICPC 2008, ICSM 2008, WCRE 2008, TOOLS 2007, DAW (AOSD 2005).

I was in charge of maintaining the bibliography of the OBASCO team during two years (2004-2005).

## Awards

From 2007/10 until 2008/10: Laureate of a Lavoisier bursary, funded by the French Ministry of Foreign Affairs — Amount: 8,400€.

## Seminars

I have presented my work at PL 2009 (Summer School on Programming Languages, Santiago, Chile), University of La Plata (Argentina), Sattose 2009, Université de Montréal (DIRO, 2007), Mosart (Montreal Software Analysis Research Talks, 2007 & 2008), Université de Nantes (PhD workshop, 2005).

## Programs

I am currently principal maintainer of the Moose analysis platform, as well as a contributor to the Mondrian software visualization engine and the Fame meta-modeling framework.

<http://www.moosetechnology.org/>

I have contributed patches to Pharo, an open-source Smalltalk, and Omnibrowser, an advanced browser for Pharo.

<http://www.pharo-project.org>

<http://scg.unibe.ch/research/hermion>

I implemented Nightowl, an eclipse plugin to allow quick edition of Athena scripts, a tiny Smalltalk engine running in Java.

<http://www-etud.iro.umontreal.ca/~deniersi/nightowl/nightowl.html>

I have a special interest in information systems dedicated to the Web, such as Wikis. I put this experience in different associative projects, providing information management tools. I have designed and implemented Wikino, a light CMS based on a Wiki engine. This tool gives the end user a seamless web experience while retaining the flexibility and the powerful relational model of Wikis for the editor. See <http://crco.ouvaton.org/> for an example.