Thomas Degueule

Laboratoire Bordelais de Recherche en Informatique (LaBRI)
Software Engineering Group (*Progress*)
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Academic Positions

Tenured Researcher (*Chargé de Recherche*), CNRS
Laboratoire Bordelais de Recherche en Informatique (LaBRI) *January 2020 – current*
Full-time tenured research-only position.

Postdoctoral Researcher
Centrum Wiskunde & Informatica (CWI) *January 2017 – December 2019*
Postdoctoral researcher in the *Software Analysis and Transformation* group (SWAT) in the context of the EU's H2020 project CROSSMINER and the associate team CWI–Inria *Agile Language Engineering*.

Doctoral Researcher & Teaching Assistant
Inria – University of Rennes (IRISA) *October 2013 – December 2016*
Ph.D. candidate in the *Diversity-centric Software Engineering* group (DiverSE) at IRISA under the supervision of Olivier Barais, Arnaud Blouin, and Benoit Combemale.

Education

University of Rennes — Rennes, France
PhD degree in Computer Science *2013 – 2016*
"*Composition and Interoperability for External Domain-Specific Language Engineering*" [29]
Advisors:
— Pr. Olivier Barais, University of Rennes, France
— Dr. Arnaud Blouin, INSA Rennes, France
Jury:
— Pr. Mark van den Brand – Eindhoven University of Technology, Netherlands – *Reviewer*
— Pr. Richard Paige – University of York, United Kingdom – *Reviewer*
— Pr. Sandrine Blazy – University of Rennes, France – *Chair*
— Dr. Benoit Combemale – University of Rennes, France – *Examiner*
— Pr. Ralf Lämmel – University of Koblenz-Landau, Germany – *Examiner*
— Pr. Bernhard Rumpe – RWTH Aachen University, Germany – *Examiner*
— Pr. Olivier Barais – University of Rennes, France – *Director*
— Dr. Arnaud Blouin – INSA Rennes, France – *Co-director*
Defense date: December 12, 2016

University of Nantes — Nantes, France
Master's degree in Computer Science *2011 – 2013*

University of La Rochelle — La Rochelle, France
Bachelor's degree in Computer Science *2009 – 2011*

University Institute of Technology of La Rochelle — La Rochelle, France
University degree of technology in Computer Science *2007 – 2009*

Awards

Distinguished Papers
Best Paper Award for [10]
44th International Conference on Software Engineering (ICSE'22), NIER track

Distinguished Paper Award for [20]
11th International Conference on Software Language Engineering (SLE'18)

Distinguished Artifact Award for [12]
11th International Conference on Software Language Engineering (SLE'18)

Best Software Engineering Technology Paper for [14]
Awarded by VERSEN (Dutch National Association for Software Engineering)

ACM Student Research Competition
2nd place in the International ACM SRC Grand Finals 2016
"*Interoperability and Composition of DSLs with Melange*" [30]

Current PhD Students

Gustave Monce (University of Bordeaux)
behavioral software library evolution *2022 – ongoing*

Corentin Latappy (University of Bordeaux/Promyze)
code review, linting, software craftmanship *2021 – ongoing*

Christophe Casseau (University of Bordeaux)
computation notebooks, reproducibility, Jupyter *2019 – ongoing*

Past PhD Students

Lina Ochoa (CWI & Eindhoven University of Technology)
"Break the Code? Breaking Changes and Their Impact on Software Evolution" *2017 – 2023*
Lina defended her thesis *Cum Laude* and is now an assistant professor at Eindhoven University of Technology.

Services

— Member of the Editorial Board of the Journal of Object Technology (JOT)
— Program co-chair of the *16th International Conference on Software Language Engineering* (SLE'23)
— Jury member for the *Gilles Kahn Thesis Prize* awarded by the *Société Informatique de France* (2020–2022)
— Co-chair of the *3rd International Workshop on Modeling Language Engineering and Execution* (MLE'21), co-located with MODELS'21
— PhD Committees
  ⋆ Lina Ochoa. *Break the Code? Breaking Changes and Their Impact on Software Evolution*, Eindhoven University of Technology, Netherlands. March 29th, 2023. Co-promotor.
  ⋆ Mohammed Chakib Belgaid. *Green Coding: an Empirical Approach to Harness the Energy Consumption of Software Services*, Inria/University of Lille, France. December 14, 2022. Examiner.
  ⋆ Nicolas Harrand. *Software Diversity for Third-Party Dependencies*, KTH Royal Institute of Technology, Sweden. May 5, 2022. Examiner.
  ⋆ Manuel Leduc. *On Modularity and Performance of External Domain-specific Language Implementations*. University of Rennes 1, France. December 12, 2019. Invited.
— Co-animator of the GDR-GPL working group "Vélocité Logicielle"
— Co-organizer of the IPA Fall Days 2019 on Software Legacy and Evolution (21 invited speakers)
— Organizer of the Software Engineering Meetings (SEM) at CWI (2017 – 2019)
— Co-chair of the Artifact Evaluation Committee for:
  ⋆ *21st International Conference on Model-Driven Engineering Languages and Systems* (MODELS'18)
— Program Committee member for:
  ⋆ *4th International Workshop on Modeling Language Engineering and Execution* (*MLE@MODELS'22*)
  ⋆ *5th International Workshop on Software Refactoring*, co-located with ASE'21

- ⋆ *1st International Workshop on Evaluation and Analysis of Recommender Systems in Software Engineering* (*WEARS'21*), co-located with EASE'21
- ⋆ *1st International Workshop on DATA4MDE*, co-located with STAF'21
- ⋆ *19th International Conference on Generative Programming: Concepts & Experiences* (*GPCE'20*)
- ⋆ *23th International Conference on Model Driven Engineering Languages and Systems* (*MODELS'20*)
  - Tutorials track
  - Tools & Demo track
  - ACM Student Research Competition Track
- ⋆ *Challenges of the French Programming and Software Engineering Research Community 2020*
- ⋆ *12th International Conference on Software Language Engineering* (*SLE'19*)
- ⋆ *22th International Conference on Model Driven Engineering Languages and Systems* (*MODELS'19*)
  - Tutorials track
  - Posters track
- ⋆ *International Workshop on Modeling Language Engineering and Execution* (*MLE@MODELS'19*)
- ⋆ *18th International Conference on Generative Programming: Concepts & Experiences* (*GPCE'19*)
- ⋆ *11th International Conference on Software Language Engineering* (*SLE'18*)
- ⋆ *21th International Conference on Model Driven Engineering Languages and Systems* (*MODELS'18*)
  - Tools and Demos track
  - Poster Track
- ⋆ *Software Language Engineering Body of Knowledge Workshop* (*SLEBoK@SLE'18*)
- ⋆ *4th International Workshop on Executable Modeling* (EXE@MODELS'18)
- ⋆ *3rd International Workshop on Executable Modeling* (EXE@MODELS'17)

— Artifact Evaluation Committee member for:
- ⋆ *10th International Conference on Software Language Engineering* (SLE'17)
- ⋆ *9th International Conference on Software Language Engineering* (SLE'16)

— Reviewer for:
- ⋆ *Empirical Software Engineering* (EMSE)
- ⋆ *Software & Systems Modeling* (SoSyM)
- ⋆ *Journal of Computer Languages* (COLA)
- ⋆ *Computer Languages, Systems and Structures* (COMLAN)
- ⋆ *The Journal of Object Technology* (JOT)
- ⋆ *Computer Standards & Interfaces* (CSI)
- ⋆ *IET Software*

Invitations to Workshops

— SLEBOK: The Software Language Engineering Body of Knowledge
Dagstuhl Seminar #17342
5 days – Germany – 2017

— 1st Workshop on Language Reuse
McGill's Bellairs Research Institute
7 days – Barbados – 2017

— Globalizing Domain-Specific Languages
Dagstuhl Seminar #14412
5 days – Germany – 2014

Research Projects

— ALIEN: Usage-Driven Software Library Evolution
2022 – 2026
ANR JCJC Project: individual research projects coordinated by young researchers

— CWI–Inria Agile Language Engineering (ALE) associate team
2017 – 2022
Associate research team between the DiverSE team at Inria and the SWAT team at CWI
http://gemoc.org/ale/

— CROSSMINER: Developer-Centric Knowledge Mining from Large Open-Source Software Repositories
2017 – 2019
European Union's Horizon 2020 Research and Innovation Programme, project No. 732223
http://www.crossminer.org
— Clarity: Ecosystem for the Model-based Systems Engineering Solution Capella
2014 – 2017
LEOC Project
http://www.clarity-se.org/
— GEMOC: A Generic Framework for Model Execution and Dynamic Analysis
2012 – 2016
ANR Project, Program INS
http://gemoc.org/ins/
— MERgE: Multi-Concerns Interactions System Engineering
2013 – 2016
ITEA2 European Project
http://www.merge-project.eu/

Teaching

During my PhD, I was a teaching assistant at the University of Rennes 1 (ISTIC) and École Supérieure d'Ingénieurs de Rennes (ESIR) where I taught software engineering courses and supervised labwork and student projects. Table 1 sums up my teaching activity.

Course name	**Institute**	**Level**	**CM**	**TD**	**TP**	**Total**
Model-Driven Engineering (IMTQL)	ESIR	Master 2	4	4	18	26
Model-Driven Engineering (IDM)	ISTIC	Master 2	-	-	24	24
Object-Oriented Analysis and Design (ACO)	ISTIC	Master 1	-	-	22	22
Object-Oriented Architectures (AOC)	ISTIC	Master 2	-	-	10	10
Distributed Information Systems (SIR)	ISTIC	Master 1	2	2	10	14
			6	6	84	96

Table 1: Teaching activity (in hours) – CM = Lectures, TD = Seminars, TP = Practical sessions

Alongside my teaching activity, I was also invited to review, take part in the jury, and grade several master's theses.

Academic Software Development

— Eclipse Scava
https://eclipse.org/scava/
— Maracas
https://github.com/alien-tools/maracas
— The Melange language workbench [28]
http://melange-lang.org
— The Action Language for Ecore (ALE)
http://gemoc.org/ale-lang/
— The K3 meta-language
http://www.kermeta.org
— The Eclipse GEMOC Studio
https://eclipse.org/gemoc/
— KCVL
https://diverse-project.github.io/kcvl/

— Alex
https://diverse-project.github.io/alex/

Publications

Refereed Journal Articles

[1] Lina Ochoa, Thomas Degueule, Jean-Rémy Falleri, and Jurgen Vinju. "Breaking Bad? Semantic Versioning and Impact of Breaking Changes in Maven Central". In: *Empirical Software Engineering* 27.3 (2022), pp. 1–42. DOI: 10.1007/s10664-021-10052-y.

[2] Manuel Leduc, Gwendal Jouneaux, Thomas Degueule, Gurvan Le Guernic, Olivier Barais, and Benoit Combemale. "Automatic Generation of Truffle-based Interpreters for Domain-Specific Languages". In: *Journal of Object Technology* 19.2 (2020), pp. 1–21. DOI: 10.5381/jot.2020.19.2.a1.

[3] Benoit Combemale et al. "Concern-Oriented Language Development (COLD): Fostering Reuse in Language Engineering". In: *Computer Languages, Systems & Structures* 54 (2018), pp. 139–155. ISSN: 1477-8424. DOI: 10.1016/j.cl.2018.05.004.

[4] Thomas Degueule, Benoit Combemale, Arnaud Blouin, Olivier Barais, and Jean-Marc Jézéquel. "Safe Model Polymorphism for Flexible Modeling". In: *Computer Languages, Systems & Structures* 49 (2016), pp. 176–195. ISSN: 1477-8424. DOI: 10.1016/j.cl.2016.09.001.

[5] David Méndez-Acuña, José A. Galindo, Thomas Degueule, Benoit Combemale, and Benoit Baudry. "Leveraging Software Product Lines Engineering in the Development of External DSLs: A Systematic Literature Review". In: *Computer Languages, Systems & Structures* 46 (2016), pp. 206–235. ISSN: 1477-8424. DOI: 10.1016/j.cl.2016.09.004.

[6] Vincent Aranega, Jean-Marie Mottu, Anne Etien, Thomas Degueule, Benoit Baudry, and Jean-Luc Dekeyser. "Towards an Automation of the Mutation Analysis Dedicated to Model Transformation". In: *Software Testing, Verification and Reliability* 25.5-7 (2015), pp. 653–683. ISSN: 1099-1689. DOI: 10.1002/stvr.1532.

Book Chapters

[7] Thomas Degueule, Benoit Combemale, and Jean-Marc Jézéquel. "On Language Interfaces". In: *Present and Ulterior Software Engineering*. Ed. by Manuel Mazzara and Bertrand Meyer. Springer International Publishing, 2017, pp. 65–75. DOI: 10.1007/978-3-319-67425-4_5.

[8] Betty H. C. Cheng, Thomas Degueule, Colin Atkinson, Siobhán Clarke, Ulrich Frank, Pieter J. Mosterman, and Janos Sztipanovits. "Motivating Use Cases for the Globalization of DSLs". In: *Globalizing Domain-Specific Languages*. Ed. by Benoit Combemale, Betty H. C. Cheng, Robert B. France, Jean-Marc Jézéquel, and Bernhard Rumpe. Springer International Publishing, 2015, pp. 21–42. DOI: 10.1007/978-3-319-26172-0_3.

Refereed Conference Papers

[9] Corentin Latappy, Quentin Perez, Thomas Degueule, Jean-Rémy Falleri, Christelle Urtado, Sylvain Vauttier, Xavier Blanc, and Cédric Teyton. "MLinter: Learning Coding Practices from Examples—Dream or Reality?" In: *30th IEEE International Conference on Software Analysis, Evolution and Reengineering, SANER 2023, Macao, China, March 21-24, 2023*. IEEE, 2023.

[10] Lina Ochoa, Thomas Degueule, and Jean-Rémy Falleri. "BreakBot: Analyzing the Impact of Breaking Changes to Assist Library Evolution". In: *44th IEEE/ACM International Conference on Software Engineering: New Ideas and Emerging Results ICSE (NIER) 2022, Pittsburgh, PA, USA, May 22-24, 2022*. IEEE, 2022, pp. 26–30. DOI: 10.1109/ICSE-NIER55298.2022.9793524.

[11] Phuong T. Nguyen, Juri Di Rocco, Davide Di Ruscio, Lina Ochoa, Thomas Degueule, and Massimiliano Di Penta. "FOCUS: A Recommender System for Mining API Function Calls and Usage Patterns". In: *Proceedings of the 41th International Conference on Software Engineering*. Montréal, QC, Canada: IEEE / ACM, 2019, pp. 1050–1060. DOI: 10.1109/ICSE.2019.00109.

[12] Manuel Leduc, Thomas Degueule, and Benoit Combemale. "Modular Language Composition for the Masses". In: *Proceedings of the 11th ACM SIGPLAN International Conference on Software Language Engineering*. Distinguished Artifact Award. Boston, MA, USA: ACM, 2018, pp. 47–59. DOI: 10.1145/3276604.3276622.

[13] Lina Ochoa, Thomas Degueule, and Jurgen J. Vinju. "An Empirical Evaluation of OSGi Dependencies Best Practices in the Eclipse IDE". In: *Proceedings of the 15th International Conference on Mining Software Repositories*. Gothenburg, Sweden, 2018, pp. 170–180. DOI: 10.1145/3196398.3196416.

[14] Ulyana Tikhonova, Jouke Stoel, Tijs van der Storm, and Thomas Degueule. "Constraint-based Run-time State Migration for Live Modeling". In: *Proceedings of the 11th ACM SIGPLAN International Conference on Software Language Engineering*. Boston, MA, USA: ACM, 2018, pp. 108–120. DOI: 10.1145/3276604.3276611.

[15] Manuel Leduc, Thomas Degueule, Benoit Combemale, Tijs van der Storm, and Olivier Barais. "Revisiting Visitors for Modular Extension of Executable DSMLs". In: *20th ACM/IEEE International Conference on Model Driven Engineering Languages and Systems, MODELS 2017*. Austin, TX, USA, 2017, pp. 112–122. DOI: 10.1109/MODELS.2017.23.

[16] Thomas Degueule, Benoit Combemale, Arnaud Blouin, Olivier Barais, and Jean-Marc Jézéquel. "Melange: a Meta-Language for Modular and Reusable Development of DSLs". In: *Proceedings of the 2015 ACM SIGPLAN International Conference on Software Language Engineering*. Pittsburgh, PA, USA: ACM, 2015, pp. 25–36. DOI: 10.1145/2814251.2814252.

[17] Jean-Marc Jézéquel, David Méndez-Acuña, Thomas Degueule, and Benoit Combemale and Olivier Barais. "When Systems Engineering Meets Software Language Engineering". In: *Proceedings of the Fifth International Conference on Complex Systems Design & Management (CSD&M 2014)*. 2014, pp. 1–13. DOI: 10.1007/978-3-319-11617-4_1.

Refereed Short Papers

[18] Christophe Casseau, Jean-Rémy Falleri, Xavier Blanc, and Thomas Degueule. "Immediate Feedback for Students to Solve Notebook Reproducibility Problems in the Classroom". In: *IEEE Symposium on Visual Languages and Human-Centric Computing, VL/HCC*. St Louis, MO, USA: IEEE, 2021, pp. 1–5. DOI: 10.1109/VL/HCC51201.2021.9576363.

[19] Manuel Leduc, Thomas Degueule, Eric van Wyk, and Benoit Combemale. "The Software Language Extension Problem". In: *Software and Systems Modeling* (2019). Expert's Voice, pp. 1–5. ISSN: 1619-1374. DOI: 10.1007/s10270-019-00772-7.

[20] Fabien Coulon, Thomas Degueule, Tijs van der Storm, and Benoit Combemale. "Shape-Diverse DSLs: Languages without Borders (vision paper)". In: *Proceedings of the 11th ACM SIGPLAN International Conference on Software Language Engineering*. Distinguished Paper Award. Boston, MA, USA: ACM, 2018, pp. 215–219. DOI: 10.1145/3276604.3276623.

[21] Erwan Bousse, Thomas Degueule, Didier Vojtisek, Tanja Mayerhofer, Julien Deantoni, and Benoit Combemale. "Execution Framework of the GEMOC Studio (Tool Demo)". In: *Proceedings of the 2016 ACM SIGPLAN International Conference on Software Language Engineering*. Amsterdam, Netherlands: ACM, 2016, pp. 84–89. DOI: 10.1145/2997364.2997384.

[22] Thomas Degueule, João Bosco Ferreira Filho, Olivier Barais, Mathieu Acher, Jérôme Le Noir, Sébastien Madelénat, Grégory Gailliard, Godefroy Burlot, and Olivier Constant. "Tooling Support for Variability and Architectural Patterns in Systems Engineering". In: *Proceedings of the 19th International Conference on Software Product Line, SPLC*. Tool demonstration. Nashville, TN, USA, 2015, pp. 361–364. DOI: 10.1145/2791060.2791097.

Refereed Workshop Papers

[23] Thomas Degueule, Tanja Mayerhofer, and Andreas Wortmann. "Engineering a Rover Language in GEMOC Studio & MontiCore: a Comparison of Language Reuse Support". In: *Proceedings of MODELS 2017 Satellite Event co-located with ACM/IEEE 20th International Conference on Model Driven Engineering Languages and Systems (MODELS 2017)*. Austin, TX, USA, 2017, pp. 349–354.

[24] Benoit Combemale, Julien DeAntoni, Olivier Barais, Cédric Brun, Arnaud Blouin, Thomas Degueule, Erwan Bousse, and Didier Vojtisek. "A Solution to the TTC'15 Model Execution Case Using the GEMOC Studio". In: *Proceedings of the 8th Transformation Tool Contest, a part of the Software Technologies: Applications and Foundations (STAF 2015) federation of conferences*. 2015, pp. 19–26.

[25] Thomas Degueule, Benoit Combemale, Arnaud Blouin, and Olivier Barais. "Reusing legacy DSLs with Melange". In: *Proceedings of the 15th Workshop on Domain-Specific Modeling, DSM@SPLASH*. Pittsburgh, PA, USA, 2015, pp. 45–46. DOI: 10.1145/2846696.2846697.

[26] Olivier Finot, Jean-Marie Mottu, Gerson Sunyé, and Thomas Degueule. "Using Meta-model Coverage to Qualify Test Oracles". In: *Proceedings of the Second Workshop on the Analysis of Model Transformations (AMT 2013)*. Miami, FL, USA, 2013.

Refereed National Workshop Papers

[27] Thomas Degueule, Joao Bosco Ferreira Filho, Jérôme Le Noir, Olivier Barais, Mathieu Acher, Grégory Gailliard, Godefroy Burlot, Olivier Constant, and Sébastien Madelénat. "Variability and Patterns in Safety/Security Systems Engineering: an Overview". In: *Journée Lignes de Produits 2014*. National French Symposium. 2014.

Technical Reports / Others

[28] Inria DiverSE Team. *The Melange Language Workbench*. Version 0.2.1. Jan. 11, 2018. URL: http://melange-lang.org.

[29] Thomas Degueule. "Composition and Interoperability for External Domain-Specific Language Engineering". PhD thesis. Université de Rennes 1, Dec. 2016. URL: https://hal.inria.fr/tel-01427009.

[30] Thomas Degueule. *Interoperability and Composition of DSLs with Melange*. Tech. rep. Submission to the ACM Student Research Competition Grand Finals. Inria, 2016.

[31] Thomas Degueule. "Génération automatique de modèles de test pour les transformations de modèles en exploitant l'analyse de mutation". In French. MA thesis. University of Nantes, 2013.