

Kacper Bąk, Ph.D.

Curriculum Vitae

April 18, 2018

Boston, MA / San Francisco, CA, United States

✉ contact@kacper.me

🌐 <http://kacper.me>

*Software Engineering Research and Advanced Development,
Blockchain, Security Audits*

Education

2009–2013 **Ph.D.**, *University of Waterloo*, Canada.

Computer Science, Adviser: Prof. Krzysztof Czarnecki, GPA: 91.38/100

Research in Software Engineering: Software Product Lines, Modeling Languages, Variability

2006–2009 **B.Sc.**, *Warsaw University of Technology*, Poland.

Computer Science, Adviser: Dr. Artur Krystosik, GPA: 4.75/5.00, *Summa Cum Laude*

Experience

2018–present **Senior Research Engineer**, *Engineering*, Quantstamp, San Francisco, CA, USA.

Projects:

QSP Network, blockchain for performing automated security audits of smart contracts;

Security Audits, manual and automated security audits of smart contracts.

2013–2017 **Senior Software Engineer**, *Modeling Framework*, MathWorks, Natick, MA, USA.

Projects:

MFO, class-based modeling framework offering modeled services: associations management, model versioning, serialization, synchronization (between C++, MATLAB, and JavaScript implementations), transformations, traceability links, evolution, visualization, attribute maps;

Class Modeling, native support for associations management in MATLAB;

Clam, a web-based class modeling editor for MATLAB;

Dependency Viewer, a web-based dependency viewer for Simulink models;

Diagram Framework, framework for generating graph-based graphical editors.

2009–2013 **Research Assistant**, *GSD Lab*, University of Waterloo, Canada.

Projects:

Clafer, a unified language for modeling and analysis of variability in Software Product Lines;
Common Variability Language (CVL), OMG proposal for a standard for specifying and resolving variability;

Example-Driven Modeling (EDM), an approach that systematically uses explicit examples for eliciting, modeling, verifying, and validating complex business knowledge.

Teaching Assistant, *GSD Lab*, University of Waterloo, Canada.

Courses:

Spring 2012, *Software Design and Architecture (SE 464)*, SE 464;

Fall 2011, *Design Project Planning (SE 390)*, SE 390;

Spring 2010, *Software Abstraction and Specification (CS 246SE)*, CS 246SE;

Winter 2010, *Compiler Construction (CS 444/644)*, CS 444/644;

Fall 2009, *Elementary Algorithm Design and Data Abstraction (CS 136)*, CS 136.

- Summer **Software Engineer**, *Opera Mini*, Opera Software, Linköping, Sweden.
2009 Development of mobile browser and user interface. Technologies: C++, Java and Bream (proprietary).
- Summer **Software Engineer**, *Opera Mini*, Opera Software, Linköping, Sweden.
2008 Compiler and virtual machine performance optimizations. Technologies: Java and Bream (proprietary).
- Summer **Software Quality Engineer**, *DTV Lab*, Samsung R&D Center, Warsaw, Poland.
2007 Development of a database application for classifying Digital TV streams. Technologies: C# and PHP.
- 2006–2008 **Software Engineer**, *SSESG*, Warsaw University of Technology, Poland.
Constructing software for on-board computer, communications, and distributed satellite testing.
Projects:
PW-Sat, the first Polish satellite;
ESEO, a micro-satellite mission within European Space Agency’s Education Satellite Program;
BOBAS2, a stratospheric balloon mission.

Awards

- 2011–2012 Ph.D. Fellowship, IBM Canada Centers for Advanced Studies Research
- 2010–2012 International Doctoral Student Award, University of Waterloo
David R. Cheriton Graduate Scholarship, University of Waterloo
- Winter 2010 UW Graduate Scholarship, University of Waterloo
- 2009–2010 Graduate Experience Award, University of Waterloo
International Masters Student Award, University of Waterloo
Graduate Entrance Scholarship, University of Waterloo
- 2007–2008 Academic Performance Award, Warsaw University of Technology

Publications

- Michał Antkiewicz, **Kacper Bąk**, Krzysztof Czarnecki, Dina Zayan, Andrzej Wąsowski, and Zinovy Diskin. Example-Driven Modeling Using Clafer. In *MDEBE*, 2013.
- Michał Antkiewicz, **Kacper Bąk**, Alexander Murashkin, Rafael Olacchia, Jimmy Liang, and Krzysztof Czarnecki. Clafer tools for product line engineering. In *SPLC*, 2013.
- IBM, Thales, Fraunhofer FOKUS, and TCS. *Proposal for Common Variability Language (CVL) Revised Submission*, 2012.
- Kacper Bąk**. Certificateless cryptography. BSc Thesis, Warsaw University of Technology, 2009.
- Kacper Bąk**. *Modeling and Analysis of Software Product Line Variability in Clafer*. PhD thesis, University of Waterloo, 2013.
- Kacper Bąk**, Krzysztof Czarnecki, and Andrzej Wąsowski. Feature and Class Models in Clafer: Mixed, Specialized, and Coupled. Technical Report CS-2010-10, University of Waterloo, 2010.
- Kacper Bąk**, Krzysztof Czarnecki, and Andrzej Wąsowski. Feature and Meta-Models in Clafer: Mixed, Specialized, and Coupled. In *SLE*, 2010.

Kacper Bąk, Zinovy Diskin, Michał Antkiewicz, Krzysztof Czarnecki, and Andrzej Wąsowski. Partial Instances via Subclassing. In *SLE*, 2013.

Kacper Bąk, Zinovy Diskin, Michał Antkiewicz, Krzysztof Czarnecki, and Andrzej Wąsowski. Clafer: Unifying Class and Feature Modeling. In *SOSYM*, 2014.

Kacper Bąk, Dina Zayan, Krzysztof Czarnecki, Michał Antkiewicz, Zinovy Diskin, Andrzej Wąsowski, and Derek Rayside. Example-Driven Modeling. Model = Abstractions + Examples. In *ICSE*, 2013.

Speaking

- 2018 World Crypto Economic Forum
- 2017 International Summer School on Domain-Specific Modeling Theory and Practice
- 2013 Dagstuhl Seminar on Analysis, Test and Verification in The Presence of Variability
- 2011 Dagstuhl Seminar on Feature-Oriented Software Development (FOSD)

Academic Service

- Co-reviewer
- Theoretical Computer Science
 - IEEE Transactions on Software Engineering
 - SCP special issue on Software Evolution, Variability and Adaptability
 - Applications of Graph Transformations with Industrial Relevance
 - International Conference on Software Engineering
 - International Conference on Software Language Engineering
 - International Software Product Line Conference
 - International Conference on Model Transformation
 - International Conference on Generative Programming and Component Engineering
 - ACM/IEEE International Conference on Model Driven Engineering Languages and Systems
 - IEEE/ACM International Conference on Automated Software Engineering
 - European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering
 - International Workshop on Variability Modelling of Software-intensive Systems
 - Workshop on Domain-Specific Modeling
 - International Workshop on Modeling in Software Engineering

Graduate Courses

- CS 744 **Advanced Compiler Design.**
Project: Optimized Translation of Clafer Models to Alloy
- CS 846 **Topics in Software Evolution and Empirical Studies.**
Project: Software Product Line Evolution: the Linux Kernel
- CS 746 **Software Architecture.**
Project: Exemplar of Automotive Architecture with Variability
- CS 889 **Open Source Usability.**
Project: Improving Usability of the Linux Kernel Configuration Tools
- CS 886 **Persuasive Technologies.**
Project: Modeling Variation Space of Tailored Messages
- CS 846 **Model-Based Software Engineering.**
Project: Clafer: a Unified Language for Class and Feature Modeling

CS 798 **Interpreters for Functional Languages.**

Project: Interpreter for FSML: Detecting Framework Concepts in Source Code Through Reverse-Engineering

CS 745 **Computer-Aided Verification.**

Languages

Polish **Native**

English **Fluent**

Portuguese **Basic**

Computer Languages

Programming C, C++, Java, JavaScript, C#, Assembler, Haskell, Scheme, ML, Prolog

Modeling UML, OCL, MOF, MOFM2T, CVL, MATLAB, Alloy, Clafer

Other \LaTeX , SQL, Solidity