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CITIZENSHIP	Icelandic	
EDUCATION	Chalmers University of Technology , Göteborg, Sweden Ph.D., Computer Science, ongoing since August 2009 <ul style="list-style-type: none">• Supervisor: Andrei Sabelfeld• Areas of Study: Language based security, type based information flow analysis, application of information flow analysis to web security Reykjavik University , Reykjavik, Iceland M.Sc., Computer Science, June 2009 <ul style="list-style-type: none">• Thesis Topic: Topics in Structural Operational Semantics• Supervisor: Luca Aceto• Areas of Study: Process Algebra, Operational Semantics University of Iceland , Reykjavik, Iceland B.Sc., Mathematics, June 2004 <ul style="list-style-type: none">• Emphasis on Computer Science	
ACADEMIC EXPERIENCE	Chalmers University of Technology , Göteborg, Sweden <i>Graduate Student</i> August 2009 to present <ul style="list-style-type: none">• Participated in the Marktoberdorf Summer School of Logics and Languages for Reliability and Security, Germany, August 2009.• Participated in the FOSAD Summer School in Bertinoro, Italy, September 2009. <i>Teaching Assistant</i> November 2009 to present <ul style="list-style-type: none">• <i>Data Structures</i>, exercises and lab supervision.• <i>Mathematical Modeling</i>, exercise supervision.• <i>Programming Language Technology</i>, exercises, lab supervision, exam grading and admin.• <i>Language Based Security</i>, lab supervision. Reykjavik University , Reykjavik, Iceland <i>Graduate Student</i> September 2007 to June 2009 <ul style="list-style-type: none">• Research assistantship from January 2008• Visiting Technical University of Eindhoven (TU/e) for two months during fall semester of 2008 for research related to M.Sc. thesis. <i>Teaching Assistant</i> January 2008 to April 2009 <ul style="list-style-type: none">• <i>Algorithm Design and Analysis</i>, weekly grading of assignments and preparation and presentation of solutions in class.• <i>Computer Science for Engineers II</i>, administering daily lab sessions in a three-week intensive course on programming, assisted with creation of exercises and exams.• <i>Introduction to Artificial Intelligence</i>, weekly lab sessions, creation of exercises, assistance with programming projects and grading.	

University of Iceland, Reykjavik, Iceland

Undergraduate Student

September 2001 to June 2004

**AWARDS AND
HONOURS**

Recipient of the Google European Doctoral Fellowship in Computer Security, 2010.

Recipient of Icelandic Chamber of Commerce Scholarship for Higher Education in Information Technology, 2010.

Recipient of scholarship from the Icelandic Research Fund for Graduate Students, 2008.

PUBLICATIONS

Conference and workshop papers

- Arnar Birgisson and Andrei Sabelfeld. *Multi-run security*. Proceedings of the European Symposium on Research in Computer Science (ESORICS 2011)
- Arnar Birgisson, Frank McSherry, and Martín Abadi. *Capabilities for Information Flow*. ACM SIGPLAN Sixth Workshop on Programming Languages and Analysis for Security (PLAS 2011).
- Arnar Birgisson, Alejandro Russo, and Andrei Sabelfeld. *Capabilities for Information Flow*. ACM SIGPLAN Sixth Workshop on Programming Languages and Analysis for Security (PLAS 2011).
- Luca Aceto, Arnar Birgisson, Anna Ingólfssdóttir, and MohammadReza Mousavi. *Decompositional Reasoning about the History of Parallel Processes*. Proceedings of the 4th International on Fundamentals of Software Engineering (FSEN 2011).
- Arnar Birgisson, Alejandro Russo, and Andrei Sabelfeld *Unifying Facets of Information Integrity*. Sixth International Conference on Information Systems Security (ICISS 2010).
- Arnar Birgisson and Úlfar Erlingsson. *An Implementation and Semantics for Transactional Memory Introspection in Haskell*. ACM SIGPLAN Fourth Workshop on Programming Languages and Analysis for Security (PLAS 2009).
- Luca Aceto, Arnar Birgisson, Anna Ingólfssdóttir, MohammadReza Mousavi and Michel Reniers. *Rule Formats for Determinism and Idempotency*. LNCS proceedings of Fundamentals of Software Engineering 2009.
- Arnar Birgisson, Mohan Dhawan, Úlfar Erlingsson, Vinod Ganapathy, Liviu Iftode. *Enforcing Authorization Policies using Transactional Memory Inspection*. ACM Conference on Computer and Communications Security (CCS 2008), pp. 223–234. 2008.

Journal papers

- Luca Aceto, Arnar Birgisson, Anna Ingólfssdóttir, MohammadReza Mousavi and Michel Reniers. *Rule Formats for Determinism and Idempotency (journal version)*. Science of Computer Programming. Guest editors Farhad Arbab and Marjan Sirjani. 2010.

**PROFESSIONAL
EXPERIENCE**

Microsoft Research Silicon Valley, Mountain View, CA, USA

Research Intern

June 2010 to September 2010

- Research on Differential Privacy and Information Flow, supervised by Frank McSherry and Martín Abadi.

Kvos (Oddi Printing Ltd. before company restructure in 2006), Reykjavik, Iceland

IT Systems Analyst

June 2004 to December 2007

- Designed and implemented specialised in-house web-based IT systems for billing and production planning, human resources among others.
- Implemented and maintained IT infrastructure for web-based information systems.

- Design and maintenance on several mission-critical databases.
- Partly responsible for design and maintenance of networking and telephone infrastructure.
- Technical consultant on automated layout and desktop publishing. Helped with various jobs dealing with computer-driven layout.

Part-time IT systems designer and programmer **May 2000 to June 2004**

- Designed and implemented web-based information systems for production planning and management, billing, website content management.
- Implemented and maintained Linux based infrastructure for several web-based information systems.

visir.is, Reykjavik, Iceland

Web application programmer **July 1998 to April 2000**

- Custom web development for high-volume Icelandic news website. Included database design and maintenance.

MotorIs, Reykjavik, Iceland

Production assistant **summers of 1996–1998**

- Various jobs in producing a weekly 30 minute show on Icelandic motor sport aired internationally. Jobs included cameraman, non-linear editing, sound mixing and graphical design.
- Assisting in administration of rally and off-road tournaments, including implementing simple systems for score keeping, public announcements etc.

Various, Eskifjörður, Iceland **summers before 1996**

Various summer jobs as a teenager in fish factories, public service and commerce.

PERSONAL RESEARCH STATEMENT

Already, many critical parts of modern society rest on top of several layers of computer software and hardware, and things will only become more complex in the future. As with other engineering efforts, I believe that such systems cannot meet the requirements of reliability and maintainability unless they are built on solid, well specified and sound foundations. To address this, and preferably further the state of the art, my research interests lie in the various topics surrounding programming languages and language based security. Programming languages provide system designers with the necessary high-level abstractions to realize their designs, and as such, programming languages and the related technologies need to be all things to everyone. They must be expressive enough to allow the designer to create a complete and maintainable system. They must be simple, so that the systems they express can be understood and maintained. They must be built on solid foundations which provide assurances of correctness, in many cases through mathematical verification. All of this is important in the context of security, where language technology can significantly contribute to the task of designing and implementing safe systems.

The main purpose of programming languages is to provide a mapping from a high-level specification of a system to a lower level. The lower level can be abstract, mathematical models of execution – or it can be hardware or even a lower layer of software (actually the most common case). I find great joy in studying such mappings, designing new ones and finding ways to improve them. A particularly useful application of such research is in security. Security issues cross-cut the abstraction levels of systems, i.e. a system that appears safe on one abstraction level may very well not be on another one. By building in helpful features in the mapping between layers, namely programming languages, it is possible to make it significantly easier to write verifiably safe systems.

My experience and interest in the practicalities of programming and computer architecture fuses rather well with my fascination for the theoretical aspect. By combining these two, I'd like to gain even deeper understanding of the current state of the art to be able to find ways to advance it.

REFERENCES

For letters of references, please contact any of the following persons.

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