

## Felix S. Klock II

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OBJECTIVE	“Stop the bugs; save the world.” Innovative software development, leveraging my experience in compiler and language runtime technology, in a challenging environment with an enthusiastic, smart, and respected peer group.	
SOFTWARE DEVELOPMENT SKILLS & INTERESTS	Programming languages: runtime design, memory management, JIT, static analysis Software engineering: functional programming, debugging tool design, CS education Languages: Rust, C/C++, Scheme/Lisp, Java, Python, C#, assembly (x86, ARM).	
EDUCATION	<b>Northeastern University</b> , CCIS, Boston, MA	<b>2003 – 2010</b>
	<i>Doctor of Philosophy in Computer Science</i>	
	<b>Massachusetts Institute of Technology</b> , Cambridge, MA	<b>1996 – 2001</b>
	<i>Bachelor of Science in Computer Science</i> , 2000	
	<i>Master of Engineering in Electrical Engineering and Computer Science</i> , 2001	
PROFESSIONAL EXPERIENCE	<b>Amazon Web Services</b> , remote	<b>October 2020 – present</b>
	<i>Principal Engineer, Rust Platform Team</i>	
	Roles: (1) Rust compiler team co-lead, (2) Rust compiler developer, and (3) Language design team member.	
	Project home page: <a href="https://www.rust-lang.org/">https://www.rust-lang.org/</a>	
	Achievements: TurboWish performance debugging initiative, yielding <code>tokio-console</code> deliverable. Drove “Hurry Up and <code>.await</code> ” workshop at AWS re:Invent. Screencasted using <code>rr</code> to debug Rust programs. Compiler team management, triaging issues and chasing down bugs.	
	<b>Mozilla</b> , Paris, France and remote	<b>2012 – August 2020</b>
	<i>Staff Research Engineer, Rust language</i>	
	Achievements: Spun up working groups: <i>wg-prioritization</i> (delegating compiler bug triage) and <i>wg-incr-comp</i> (improving incremental compilation in Rust). Oversaw non-lexical lifetimes (NLL; Rust RFC 2094) development and staged migration from lexical to NLL. Designed future-incompatibility reporting (Rust RFC 2834), user-defined destructors with type and lifetime parameters (Rust RFC 769), non-zeroing dynamic drop (Rust RFC 320), and Rust’s user-defined allocators (Rust RFC 1398).	
	<b>Adobe Systems Incorporated</b> , Waltham, MA	<b>2010 – 2012</b>
	<i>Computer Scientist, Actionscript 3 Virtual Machine (aka Tamarin) for Flash Runtime</i>	
	Roles: Garbage Collection (GC) expert, integration lead, cross-platform build.	
	Project history through May 2012: <a href="http://hg.mozilla.org/tamarin-redux/">http://hg.mozilla.org/tamarin-redux/</a>	
	Achievements: Improved telescoping GC inverse load-factor, reducing overhead from 20× to 4× mark/cons ratio. Implemented Native JSON integrated with AS3, and extended with serialization of public members of AS3 classes. Added JIT-support for efficient indexing of “simple dense” <code>ArrayObject</code> , yielding 10–20% speedup.	
	<b>Northeastern University</b> , Boston, MA	<b>2005 – 2010</b>
	<i>Developer and maintainer of Larceny Scheme compiler and runtime system</i>	
	Project history: <a href="http://github.com/larcenists/larceny/">http://github.com/larcenists/larceny/</a>	
	Achievements: Designed regional GC, with formal bounds on mutator utilization (MMU). Revised Intel x86 backend to emit machine code in-heap. Implemented dynamic in-heap .NET bytecode emission for Common Larceny.	

	<p><b>Northeastern University</b>, Boston, MA <b>2003 – 2009</b>  <i>Instructor of Record/Teaching Assistant</i></p>
	<p><b>Green Hills Software</b>, Santa Barbara, CA <b>2001 – 2003</b>  <i>Software Engineer for End-User Compiler Product Development</i>  Achievements: Implemented move-coalescing register allocation, data-load optimizations, and reassignment of zero-initialized and uninitialized arrays to blank static segment (bss).</p>
	<p><b>Massachusetts Institute of Technology</b>, Cambridge, MA <b>2000 – 2001</b>  <i>Teaching Assistant</i>  Assistant for 6.170, <i>Laboratory in Software Engineering</i>, Spring, Fall 2000, Spring 2001. Head Teaching Assistant Fall 2000.</p>
	<p><b>MIT Laboratory for Computer Science</b>, Cambridge, MA <b>1999 – 2001</b>  <i>Undergraduate Research Assistant for Computer Architecture Group</i>  Assisted with implementation of <i>FLEX</i> compiler for transforming Java byte-code to machine code .</p>
	<p><b>MIT Media Laboratory</b>, Cambridge, MA <b>1997 – 1998</b>  <i>Undergraduate Research Assistant for Software Agents Group</i>  Helped develop <i>Footprints</i>, a tool for visualizing navigation of users on Web.</p>
RESEARCH PUBLICATIONS	<p>Felix S Klock II, “A Declarative DSL for Customized Rendering of Text-Based Art”, in <i>Proceedings of the 2017 International Symposium on Practical Aspects of Declarative Languages</i>, PADL 2017, Paris, France January 2017.</p> <p>Felix S Klock II and William D Clinger. “Bounded-latency regional garbage collection”, In <i>Proceedings of the 2011 Dynamic Languages Symposium</i>, DLS 2011, Portland, OR, 24 October 2011, pages 73-83.</p> <p>William D Clinger and Felix S Klock II. “Scalable Garbage Collection with Guaranteed MMU”, In <i>Proceedings of the 2009 Workshop on Scheme and Functional Programming</i>, Northeastern University, Boston, MA, 22 August 2009</p> <p>Felix S Klock II, “The Layers of Larceny’s Foreign Function Interface”, In <i>Proceedings of the 2009 Workshop on Scheme and Functional Programming</i>, Victoria, British Columbia, 20 September 2008</p>
SELECTED PRESENTATIONS	<p>“Rust: Fearless at all levels” Algolia Search Party 2018  <a href="https://www.youtube.com/watch?v=9QuI2Z0stbs&amp;t=2755">https://www.youtube.com/watch?v=9QuI2Z0stbs&amp;t=2755</a>  “Subtyping in Rust and Clarke’s Third Law” Rust Fest 2016  <a href="https://www.youtube.com/watch?v=fI4RG_uq-WU">https://www.youtube.com/watch?v=fI4RG_uq-WU</a>  “Rust: A type system you didn’t know you wanted” Curry On 2015  <a href="https://www.youtube.com/watch?v=Q71QCgnNWU0&amp;t=152s">https://www.youtube.com/watch?v=Q71QCgnNWU0&amp;t=152s</a></p>
HONORS AND AWARDS	<p>Teaching Award, Northeastern University, 2008  Northern Telecom/BNR Digital Systems Laboratory Project Award, 2001</p>
INTERESTS	<p>Cooking; reading, especially historical discussions of mathematics, logic, and language development; skiing; graphics programming</p>