

Leo A. Meyerovich

CONTACT	lmeyerov@eecs.berkeley.edu http://www.eecs.berkeley.edu/~lmeyerov 415.533.5329		
INTERESTS	Languages & systems, parallelism, security, big data visualization, mobile, sociology		
EDUCATION	UC Berkeley , Berkeley, CA Ph.D. in Computer Science Advised by Rastislav Bodik “The Parallel Browser: Specification and Synthesis of Parallel Layout” <i>Expected May, 2013</i>	Brown University , Providence, RI Sc.B. in Computer Science w/Honors Advised by Shriram Krishnamurthi “Flapjax: Functional Reactive Web Programming” May, 2007	
AWARDS	PLDI, ECOOP Student Research Competition , 2 nd place SIGPLAN and NSF travel awards OOPSLA Best Student Paper Award Qualcomm Innovation Fellowship , 2 out of 50 Stanford & Berkeley teams NSF Graduate Research Fellowship First Year Fellowship , UC Berkeley CRA Outstanding Undergraduate Honorable Mention Karen. T. Romer Undergraduate Teaching and Research Award , Brown University		2012 2012 2009 2009 2007-10 2007 2007 2004
ADDITIONAL FUNDING	The parallel browser project helped secure initial and renewed funding for the Parallel Computing Laboratory (over \$10 million from Intel, Microsoft, the State of California, and others) and individual grants for the parallel browser group (Samsung, Nokia, Intel, and Google).		
CONFERENCES	<ol style="list-style-type: none">1. Leo A. Meyerovich, Matthew E. Torok, Eric Atkinson, and Rastislav Bodik. FTL: Synthesizing Structured Traversals from Attribute Grammars. PPOPP 2013. <i>PLDI, ECOOP Student Research Competition (2nd place)</i>.2. Leo A. Meyerovich and Ariel S. Rabkin. Socio-PLT: Sociological Principles for Programming Language Adoption. Onward! 2012.3. Leo A. Meyerovich and Benjamin Livshits. ConScript: Specifying and Enforcing Fine-Grained Security Policies for JavaScript in the Browser. Security and Privacy 2010.4. Leo A. Meyerovich and Rastislav Bodik. Fast and Parallel Webpage Layout. WWW 2010.5. Leo A. Meyerovich, Adrienne P. Felt, and Mark S. Miller. Object Views: Fine-Grained Sharing in Browsers. WWW 2010.6. Leo A. Meyerovich, Arjun Guha, Jacob Baskin, Gregory H. Cooper, Michael Greenberg, Aleks Bromeld, Shriram Krishnamurthi. Flapjax: A Programming Language for Ajax Applications. OOPSLA 2009. <i>Best Student Paper Award</i>.7. Kathi Fisler, Shriram Krishnamurthi, Leo A. Meyerovich, Michael Carl Tschantz. Verification and Change-Impact Analysis of Access-Control Policies. ICSE 2005.		
WORKING PAPERS	<ol style="list-style-type: none">8. Leo A. Meyerovich and Ariel S. Rabkin. Social Influences on Language Adoption. <i>Under review</i>. <i>In Wired and other popular media</i>.		

9. Leo A. Meyerovich and Todd Mytkowicz. Clustered Data Parallelism. *Awaiting submission*.

Also see advisee projects on (a) Mechanized CSS and (b) Big Data Visualization

- | | |
|------------------------------|--|
| INVITED ARTICLES | 10. Leo A. Meyerovich. Rethinking Browser Performance. <i>USENIX ;login;</i> , Aug. 2009. |
| WORKSHOPS
(PEER-REVIEWED) | <ol style="list-style-type: none"> 11. Leo A. Meyerovich, Matthew E. Torok, Eric Atkinson, Rastislav Bodik. Superconductor: A Language for Big Interactive Visualizations. LASH-C 2013. 12. Leo A. Meyerovich and Ariel S. Rabkin. How Not to Survey Developers and Repositories: Experiences Analyzing Language Adoption. PLATEAU 2012. 13. Leo A. Meyerovich, Todd Mytkowicz, Wolfram Schulte. Data Parallel Programming for Irregular Tree Computations. HotPar 2011. 14. Leo A. Meyerovich, David Y. Zhu, Benjamin Livshits. Secure Cooperative Sharing of JavaScript, Browser, and Physical Resources. W2SP 2010. 15. Chris Jones, Rose Liu, Leo A. Meyerovich, Krste Asanovic, Rastislav Bodik. Parallelizing the Web Browser. HotPar 2009. 16. Colin Gordon, Leo A. Meyerovich, Joel Weinberger, and Shriram Krishnamurthi. Composition with Consistent Updates for Abstract State Machines. ASM 2007. |
| TECHNICAL
REPORTS | <ol style="list-style-type: none"> 17. Leo A. Meyerovich and Raluca Sauciu. Perceiving the GUISE: Graphical User Interface Specification Extraction. 2007. 18. Leo A. Meyerovich and Roger Webster. Playing with FIRE: Mixing Functional and Imperative Reactivity in ECMAScript. Adobe. 2007. 19. Leo A. Meyerovich, Joel H. W. Weinberger, Colin S. Gordon, and Shriram Krishnamurthi. ASM Relational Transducer Policies. Brown TR CS-06-12. 2007. |
| PAPER
PRESENTATIONS | <ol style="list-style-type: none"> 1. PPoPP '13 (Shenzhen, China): Parallel Schedule Synthesis for Attribute Grammars (February, 2013) 2. LASH-C '13 (Shenzhen, China): Superconductor: A Language for Big Interactive Visualizations (February, 2013) 3. Onward! '12 (Tucson): Socio-PLT Sociological Principles for Programming Language Adoption (October, 2012) 4. PLATEAU '12 (Tucson): How Not to Survey Developers and Repositories: Experiences Analyzing Language Adoption (October, 2012) 5. PLDI+ECOOP SRC '12: Synthesizing and Parallelizing Layout Languages (June, 2012) 6. WWW '10: Fast and Parallel Webpage Layout (April, 2010) 7. Oakland S&P '10: ConScript: Specifying and Enforcing Fine-Grained Security Policies for JavaScript in the Browser (May, 2010) 8. W2SP '10: Secure Cooperative Sharing of JavaScript, Browser, and Physical Resources (May, 2010) 9. HotPar '09: The Parallel Web Browser (April, 2009) |

INVITED
PRESENTATIONS

10. **Nokia Research:** Superconductor: A Language for Big Data Visualization (December, 2012)
11. **IFIP Working Group on Language Design** (Austin): Pattern Synthesis for the Parallel Browser (invited speaker, December, 2012)
12. **Google** (Mountain View): Socio-PLT: Principles and Analysis of Programming Language Adoption (November, 2012)
13. **MSR Faculty Summit / UPCRC:** The Parallel Browser: Architecture and Synthesis over Parallel Patterns (July, 2012)
14. **Microsoft Research** (China): Parallel Browser / Socio-PLT (short talk, June, 2012)
15. **Mozilla:** FTL: Synthesizing a Parallel Layout Engine (February, 2012)
16. **Parallelism Tools Workshop:** Synthesizing a Parallel CSS Engine (Intel, August, 2011)
17. **Qualcomm** (Santa Clara): FTL: Fast Tree Language (October, 2010)
18. **IBM Research** (Almaden): Parallel Browsers for the Mobile Era: Challenges, Solutions, and Opportunities (September, 2010)
19. **Berkeley Parallel Bootcamp:** A Parallel Browser: Lessons in Mobility and Irregularity (September, 2010)
20. **Stanford:** A Parallel Browser for the Mobile Web (May, 2010)
21. **Qualcomm:** A Principled Approach to a Browser Layout Engine (April, 2010)
22. **OOPSLA 2009:** Flapjax (demo, October, 2009)
23. **Microsoft Research:** Fast and Parallel Webpage Layout (September, 2009)
24. **Adobe:** Fast Webpage Layout (September, 2009)
25. **#moz09 (Mozilla):** It's the End of the Web as We Know It, and I Feel Fine (invited all-hands talk, April 30, 2009)
26. **CodeCon 2009:** The Parallel Web Browser (biohackers and cypherpunks, April 19th, 2009)
27. **Samsung Research:** Parallel Webpage Layout (invited seminar, February, 2009)
28. **Intel Languages Workshop:** Update on the Parallel Browser Language (industry, 2008)
29. **BayFP:** Flapjax & FIRE - Evolving a Reactive Web Language (industry, 2008)
30. **#moz08 (Mozilla):** Implicitly parallel browser scripting (invited all-hands talk, 2008)
31. **Adobe:** Mixed Imperative and Functional Reactive Programming in Flex and AS3 (research staff review + Flex team talk, 2007)
32. **Adobe:** Flapjax: Functional Reactive Web Programming (Flex team talk, 2006)

The parallel web browser, Flapjax, and Margrave projects have often also been presented as invited keynotes (STMCS08, SBLP 08), talks (Microsoft Parallel Applications Workshop 2009, Intel Browser Performance Workshop 08, JAOO07, Microsoft Lang.NET Symposium 06), and demos (SIGGRAPH Asia '12, Intel, Samsung) by Rastislav Bodik, Shriram Krishnamurthi, Ganapati Srinivasa, Tasneem Brutch, and others.

POSTERS

33. HotPar 2011: Data Parallel Programming for Irregular Tree Computations (poster, May, 2011)
34. Qualcomm (San Diego): FTL: Fast Tree Language (September, 2010)
35. Open House at Intel Labs: Parallel Webpage Processing (March, 2010)
36. Intel Developer Forum: Parallel Browser Algorithms (September, 2009)

RESEARCH LABS

Microsoft Research, Redmond Fall 2010

Vectorized webpage layout for the C3 web browser by introducing the class of *clustered data parallel* (CDP) algorithms. CDP has since been applied to the further problems of vectorizing AdaBoost, binary search, and binary decision trees.

Microsoft Research, Redmond Summer 2009

Designed linguistic constructs to enable web developers to securely control JavaScript running in their applications. Extended Internet Explorer's JavaScript engine with new constructs, removed dangerous ones, isolated a JavaScript subset for specifying policies, and developed a policy integrity analysis and several automatic policy generators.

Adobe Systems, Inc. Advanced Technology Labs Summer, Winter of 2007
Extended ActionScript with dynamic dataflow constructs for mixing functional and imperative reactivity.

Brown PLT Summer 2006
Creation and optimization of Flapjax, a language for AJAX applications featuring functional reactive constructs in JavaScript.

Brown PLT Summer 2004
Creation and optimization of the security policy analysis tool Margrave. It supports interactive queries and change impact analysis for XACML security policies.

INDUSTRY **Macromedia** Summer 2005
Impact analysis of ActionScript 3 language design changes to introduce static typing. Flex framework migration and debugging.

95.5 WBRU (Web Dept. Head and Executive Board Member) 2003 – 2005
Extensive roles in operating a top regional multi-million dollar commercial radio station.

Intelgamer, LLP Co-founder 1999 – 2002
Led national subteam of 5 to create CMS products for game companies and communities.

Web, Flash, and Accounting Independent Contracting 1998 – 2003

SERVICE **Workshop organization** Assisting organization of DARPA-sponsored workshop on programming language adoption (February 11-12, 2013, Washington DC).

External reviewer PPOPP 2013, VMCAI 2013, Transactions on the Web 2012, ASP-LOS 2012, Software 2010, WebApps 2010, APLAS 2008, ASPLOS 2008, PPDP 2007.

Departmental Assisted in faculty candidate selection (2009) and co-organized weekly programming systems seminar (2011–current).

STUDENTS **Matthew E. Torok (Berkeley undergraduate, Fall 2011 – current)**
Superconductor: A Language for Big Data Visualization.
GPU backend and JavaScript integration for our layout language, enabling declarative scripting of real-time and interactive visualizations of 100,000 - 1,000,000 element data sets. Quickly led to Samsung grant and collaboration. Demonstrated at the Berkeley Parallel Bootcamp and at Intel workshops. Currently preparing public release for use in mobile web browsers and a corresponding publication.

Eric Atkinson (Berkeley undergraduate, Fall 2011 – current)
Specification, Parallelization, and Synthesis of the CSS Layout Language.
Project to formally specify the CSS webpage layout language, find a parallel semantics, and automatically output (synthesize) a parallel implementation. The work led to collaboration with Mozilla on incorporation into their new parallel web browser. Currently integrating into Mozilla's Servo browser and preparing for corresponding publication.

Dmitri Anishchuk (Berkeley undergraduate, Fall 2012 – current)
Multicore parsing and GPU preprocessing algorithms for the Superconductor browser-based big data visualization platform.

TEACHING
ASSISTANT (7)

Berkeley

2012 Software Engineering
2011 Designing Browser Languages
Instructor for special course
2007 Compilers
Highest course rating in last decade

Brown

2007 Discrete Math
2006 System Security
Created assignments and lectures for first offering
2006 Automata Theory (head teaching assistant)
2005 Programming Language Theory (head teaching assistant)

GRADUATE
COURSEWORK
(14)

Berkeley Social and Organizational Issues of Information, Highly Productive Parallel Languages, Parallel and Distributed Algorithms, Web Security, Advanced Operating Systems and Databases, Programming Systems (recent topics), Programming Languages (denotational semantics), Statistical Learning Theory, Applications of Parallel Computers.

Brown Programming Language Semantics, Models of Security, Software Verification, Statistical Natural Language Processing.

Rhode Island School of Design Creative Programming.

REFERENCES

Rastislav Bodik Professor
University of California, Berkeley
Brendan Eich CTO
Mozilla
James Larus Director of Research and Strategy, Principal Researcher
Microsoft Research
Wolfram Schulte Research Manager, Principal Researcher
Microsoft Research