

CV

Michael James Carbin



Date: February 17, 2021

Country of Origin: United States

Date of Birth: April 1984

Country of Citizenship: United States

Department: Dept of Electrical Engineering & Computer Science

Education Records

Institution	Degree	Date	Specialization	Thesis Title
Massachusetts Institute of Technology (MIT)	PhD	February 2015		Logical Reasoning for Approximate and Unreliable Computation
Massachusetts Institute of Technology (MIT)	Master's - Science	August 2009		Automatically Identifying Critical Behaviors in Programs
Stanford University	Bachelor's of Science with Honors	June 2006		Learning Effective BDD Variable Orders for BDD-Based Program Analysis

Fields of Interest

Field of Interest

Programming Languages

Machine Learning

MIT Appointments

Title	Type	Department	Begin Date	End Date
Assistant Professor	Primary Appointment	Dept of Electrical Engineering & Computer Science	1/1/2016	6/30/2023
Visiting Scientist	Primary Appointment	Computer Science & Artificial Intelligence Lab	3/4/2015	12/31/2015

Non-MIT Experience

Employer	Title	Begin Date	End Date
Microsoft Research	Researcher	November 2014	August 2018

Honors and Awards

Award Name	Date
MIT Frank E. Perkins Award for Excellence in Graduate Advising, MIT	2020
Sloan Research Fellowship, Alfred P. Sloan Foundation	2020
Distinguished Paper Award, International Conference on Functional Programming (ICFP)	2019
Best Paper Award, International Conference on Learning Representations (ICLR)	2019
Best Paper Award, Workshop on ML for Systems at International Symposium on Computer Architecture (ISCA)	2019
National Science Foundation Faculty Early Career Development (CAREER) Award	2018
CACM Research Highlight, Communications of the Association for Computing Machinery (CACM)	2016
Best Paper Award, Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)	2014
SIGPLAN Research Highlight, ACM Special Interest Group on Programming Languages (SIGPLAN)	2014
Best Paper Award, Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)	2013
Microsoft Research Graduate Fellowship, Microsoft Research	2008
Best Computer Science Undergraduate Honors Thesis, Stanford Computer Science Department	2006

Professorships

Title	Type	Begin Date	End Date
Jamieson Career Development Professor in EECS	Career Development	1/16/2016	1/15/2019

MIT Affiliations

Affiliation Type	Organizational Unit (Description of Activity)	Start Date	End Date
Research	Computer Science and Artificial Intelligence Lab (CSAIL) (Principle Investigator. This lab is the primary home of research activities.)	January 2016	-

Teaching Materials

Teaching Materials

Developed new class and material, Dynamic Computer Language Engineering (6.818) initially, jointly with Prof. Armando Solar-Lezama. The class departs from existing material in the department, with a principled focus on interpreting and compiling a modern, Python-like programming language. All materials within the course have been developed.

Contributions To The Educational Commons

Contributions To The Educational Commons

UROP and SuperUROP:

- Midy, Olivier S. SuperUROP. 9/6/2016 - 6/11/2017
- Tom, Brian. SuperUROP. 9/5/2017 - 6/10/2018
- Gong, Zoe P. SuperUROP. 9/5/2017 - 6/10/2018
- Michel, Jesse M SuperUROP. 9/4/2018 - 6/2/2019
- Tramontano, Jared A. UROP. 6/12/2017 - 9/4/2017
- Michel, Jesse M. UROP. 2/5/2018 - 6/10/2018
- Siswanto, Arlene E. UROP. 2/3/2020 - 5/31/2020
- Moser, Alex B. UROP. 6/1/2020 - 9/7/2020
- Movva, Rajiv. SuperUROP. 9/1/2020 - 6/1/2021

Research/Thesis

PhD as Supervisor

Student Name(s)	Thesis Title	Thesis Date	Department Name	Institution Name
Sherman, Benjamin	Programming Languages for Sound Computation with Continuous Values	July 2020	Electrical Engineering and Computer Science	MIT
Mendis, Charith	Towards Automating Construction of Compiler Optimizations	September 2020	Electrical Engineering and Computer Science	MIT
Frankle, Jonathan	TBD	2021	Electrical Engineering and Computer Science	MIT
Atkinson, Eric	TBD	2022	Electrical Engineering and Computer Science	MIT
Yang, Jianqiao	TBD	2023	Electrical Engineering and Computer Science	MIT
Renda, Alexander	TBD	2023	Electrical Engineering and Computer Science	MIT
Michel, Jesse	TBD	2026	Electrical Engineering and Computer Science	MIT
Jin, Tian	TBD	2026	Electrical Engineering and Computer Science	MIT
Weber, Logan	TBD	2026	Electrical Engineering and Computer Science	MIT
Yuan, Charles	TBD	2026	Electrical Engineering and Computer Science	MIT

PhD as Reader

Student Name(s)	Thesis Title	Thesis Date	Department Name	Institution Name
Wang, Peng	Type System for Resource Bounds with Type-Preserving Compilation	August 2018	Electrical Engineering and Computer Science	MIT
Cusumano-Towner, Marco	Gen: A High-Level Programming Platform for Probabilistic Inference	July 2020	Electrical Engineering and Computer Science	MIT
Zhang, Yunming	Making Graph Computations Fast and Simple with GraphIt	July 2020	Electrical Engineering and Computer Science	MIT

Master's

Student Name(s)	Thesis Title	Thesis Date	Department Name	Institution Name
Sherman, Benjamin	Making Discrete Decisions based on Continuous Values	June 2017	Electrical Engineering and Computer Science	MIT
Atkinson, Eric H.	Typesafety For Explicitly-Coded Probabilistic Inference Procedures	February 2018	Electrical Engineering and Computer Science	MIT
Boston, Brett C.	Verifying Application-Specific Fault Tolerance Via First-Class Fault Models	February 2018	Electrical Engineering and Computer Science	MIT
Yang, Jianqiao	Simplifying Multiple Statement Reductions with the Polyhedral Model	May 2020	Electrical Engineering and Computer Science	MIT
Renda, Alexander	Comparing Rewinding and Fine-tuning in Neural Network Pruning	May 2020	Electrical Engineering and Computer Science	MIT

MEng

Student Name(s)	Thesis Title	Thesis Date	Department Name	Institution Name
Siswanto, Arlene	TBD	January 2020	Electrical Engineering and Computer Science	MIT
Michel, Jesse	Improving Refinements in Exact Real Arithmetic	May 2020	Electrical Engineering and Computer Science	MIT
Gilles, James	The Effect of Pruning on Adversarial Vulnerability	September 2020	Electrical Engineering and Computer Science	MIT

Research/Other

UROP

Student Name	Description	Start Date	End Date
Midy, Olivier S.	SuperUROP: SigShare: Data Synchronization with Intermittent Mobile Web Connections	9/6/2016	6/11/2017
Tramontano, Jared A.	Conditional Probability in Computer Science Through Localic Theory	6/12/2017	9/4/2017
Gong, Zoe P.	SuperUROP Verifying Application-Specific Fault Tolerance with Leto	9/5/2017	6/10/2018
Tom, Brian	SuperUROP: Benchmarks and Baselines for Automated Machine Learning	9/5/2017	6/10/2018
Nortonsmith, Avery N.	Designing a new General-Purpose Programming Language	2/5/2018	6/10/2018
Michel, Jesse M.	Arbitrary Precision CAD	2/5/2018	6/10/2018
Michel, Jesse M.	SuperUROP A Step Toward Declarative Data Structures	9/4/2018	6/2/2019
Siswanto, Arlene E.	The Lottery Ticket Hypothesis and Batch Normalization	2/3/2020	5/31/2020
Moser, Alex B.	Compiler 2.0 : Automating Construction of Optimizing Compilers Using Machine Learning	6/1/2020	9/7/2020
Movva, Rajiv	SuperUROP: Parallel Pruning for Faster Discovery of Lottery Ticket Neural Networks	9/1/2020	2/7/2021

Postdoc Supervision

Name	Start Date	End Date	PhD Granting Institution	Current Title	Current Employer
Ding, Yi	January 2021	-	University of Chicago		

Publications

Books

Publication Name and Url	Publication Date
M. Carbin and S. Misailovic. "Compiling for Unreliable Hardware." In G. Barthe, J.P. Katoen, and A. Silva, "Foundations of Probabilistic Programming." Cambridge University Press.	2020

Papers in refereed journals

Publication Name and Url	Publication Date
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M. Carbin, S. Misailovic, and M. C. Rinard. "Verifying Quantitative Reliability for Programs that Execute on Unreliable Hardware." Communications of the ACM, Research Highlight, vol. 59., no. 8, pp. 83--91. cacm.acm.org...	2016
P. Stanley-Marbell, A. Alaghi, M. Carbin, E. Darulova, L. Dolecek, A. Gerstlauer, G. Gillani, D. Jevdjic, T. Moreau, M. Cacciotti, A. Daglis, N. Jerger, B. Falsafi, S. Misailovic, A. Sampson, D. Zufferey. "Exploiting Errors for Efficiency: A Survey from Circuits to Applications." ACM Computing Surveys, vol. 53, no. 3. dl.acm.org/d...	June 2020

Proceedings of refereed conferences

Publication Name and Url	Publication Date
J. Whaley, D. Avots, M. Carbin, M. S. Lam. "Using Datalog with Binary Decision Diagrams for Program Analysis." Asian Symposium on Programming Languages and Systems - APLAS, pp. 97--118. 10.1007/1157...	January 2005
M. S. Lam, J. Whaley, V. B. Livshits, M. C. Martin, D. Avots, M. Carbin, C. Unkel. "Context-Sensitive Program Analysis as Database Queries." Symposium on Principles of Database Systems - PODS (Invited), pp. 1--12. 10.1145/1065...	January 2005
M. Fähndrich, M. Carbin, J. R. Larus. "Reflective Program Generation with Patterns." International Conference on Generative Programming and Component Engineering - GPCE, pp. 275--284. 10.1145/1173...	January 2006
B. D. Carlstrom, A. McDonald, M. Carbin, C. Kozyrakis, K. Olukotun. "Transactional Collection Classes." Symposium on Principles and Practice of Parallel Programming - PPOPP, pp. 56--67. 10.1145/1229...	January 2007
J. H. Perkins, G. Sullivan, W. Wong, Y. Zibin, M. D. Ernst, M. Rinard, S. Kim, S. Larsen, S. Amarasinghe, ..., M. Carbin, et al. "Automatically Patching Errors in Deployed Software." Symposium on Operating Systems Principles - SOSP, pp. 87--102. 10.1145/1629...	January 2009
M. Carbin, M. C. Rinard. "Automatically Identifying Critical Input Regions and Code in Applications." International Symposium on Software Testing and Analysis - ISSTA, pp. 37--48. 10.1145/1831...	January 2010
M. Carbin, S. Misailovic, M. Kling, M. C. Rinard. "Detecting and Escaping Infinite Loops with Jolt." European Conference on Object-Oriented Programming - ECOOP, pp. 609--633. 10.1007/978-...	January 2011
H. Hoffmann, S. Sidiroglou, M. Carbin, S. Misailovic, A. Agarwal, M. Rinard. "Dynamic Knobs for Responsive Power-Aware Computing." International Conference on Architectural Support for Programming Languages and Operating Systems - ASPLOS, pp. 199--212. 10.1145/1950...	January 2011
M. Carbin, D. Kim, S. Misailovic, M. C. Rinard. "Proving Acceptability Properties of Relaxed Nondeterministic Approximate Programs." Conference on Programming Language Design and Implementation - PLDI, pp. 169--180. 10.1145/2254...	January 2012
M. Kling, S. Misailovic, M. Carbin, M. Rinard. "Bolt: On-Demand Infinite Loop Escape in Unmodified Binaries." International Conference on Object-Oriented Programming Systems, Languages, and Applications - OOPSLA, pp. 431--450. 10.1145/2384...	January 2012
F. Long, V. Ganesh, M. Carbin, S. Sidiroglou, M. Rinard. "Automatic Input Rectification." International Conference on Software Engineering - ICSE, pp. 80--90. 10.1109/ICSE...	June 2012
M. Carbin, S. Misailovic, M. C. Rinard. "Verifying Quantitative Reliability for Programs that Execute on Unreliable Hardware." International Conference on Object-Oriented Programming Systems, Languages, and Applications - OOPSLA (Best Paper Award), pp. 33--52. 10.1145/2509...	January 2013
S. Misailovic, M. Carbin, S. Achour, Z. Qi, M. C. Rinard. "Chisel: Reliability- and Accuracy-Aware Optimization of Approximate Computational Kernels." International Conference on Object Oriented Programming, Systems, Languages & Applications - OOPSLA (Best Paper Award), pp. 309--328. 10.1145/2660...	January 2014
S. Rajbhandari, Y. He, O. Ruwase, M. Carbin, T. Chilimbi. "Optimizing CNNs on Multicores for Scalability, Performance and Goodput." International Conference on Architectural Support for Programming Languages and Operating Systems - ASPLOS, pp. 267--280. 10.1145/3037...	January 2017
B. Sherman, L. Sciarappa, A. Chlipala, M. Carbin. "Computable Decision Making on the Reals and Other Spaces: via Partiality and Nondeterminism." Symposium on Logic in Computer Science - LICS, pp. 859--868. ** 10.1145/3209...	January 2018
B. Boston, Z. Gong, and M. Carbin. "Leto: Verifying Application-Specific Fault Tolerance via First-Class Execution Models." International Conference on Object-Oriented Programming, Systems, Languages, and Applications - OOPSLA, pp. 163:1--163:30. ** dl.acm.org/d...	October 2018
J. Frankle, M. Carbin. "The Lottery Ticket Hypothesis: Finding Sparse, Trainable Neural Networks." International Conference on Learning Representations - ICLR (Best Paper Award) ** openreview.n...	May 2019
C. Mendis, A. Renda, S. Amarasinghe, and M. Carbin. "lthema: Accurate, Portable, and Fast Basic Block Throughput Estimation using Deep Neural Networks." International Conference on Machine Learning - ICML, pp. 4505--4515. ** arxiv.org/ab...	June 2019
B. Sherman, J. Michel, and M. Carbin. "Sound and Robust Solid Modelling via Exact Real Arithmetic and Continuity." International Conference on Functional Programming - ICFP (Distinguished Paper Award), pp. 99:1--99:29. ** dl.acm.org/d...	August 2019
C. Mendis, C. Yang, Y. Pu, S. Amarasinghe, and M. Carbin. "Compiler Auto-Vectorization using Imitation Learning." Neural Information Processing Systems - NeurIPS, pp. 14598--14609. ** papers.nips....	December 2019
Y. Chen, A. Brahmakshatriya, C. Mendis, A. Renda, E. Atkinson, O. Sykora, S. Amarasinghe, and M. Carbin. "BHive: A Benchmark Suite For Validating x86-64 Performance Models." International Symposium on Workload Characterization - IISWC, pp. 167--177. ** ieeexplore.i...	December 2019
A. K. Lew, M. F. Cusumano Towner, B. Sherman, M. Carbin, and V. K. Mansinghka. "Trace Types and Denotational Semantics for Sound Programmable Inference in Probabilistic Languages." Symposium on Principles of Programming Languages - POPL, pp. 19:1--19:32. ** dl.acm.org/d...	January 2020
A. Renda, J. Frankle, and M. Carbin. "Comparing Fine-Tuning and Rewinding in Neural Network Pruning." International Conference on Learning Representations - ICLR (Oral) ** openreview.n...	April 2020
G. Baudart, L. Mandel, E. Atkinson, B. Sherman, M. Pouzet, and M. Carbin. "Reactive Probabilistic Programming." Conference on Programming Language Design and Implementation - PLDI, pp. 898--912. ** arxiv.org/ab...	June 2020
J. Frankle, G. K. Dziugaite, Daniel M. Roy, and M. Carbin. "Linear Mode Connectivity and the Lottery Ticket Hypothesis." International Conference on Machine Learning - ICML, pp. 10029 - 10039. ** arxiv.org/ab...	July 2020

A. Renda, Y. Chen, C. Mendis, M. Carbin. "DiffTune: Optimizing CPU Simulator Parameters with Learned Differentiable Surrogates." International Symposium on Microarchitecture - MICRO**	October 2020
"The Lottery Ticket Hypothesis: Finding Sparse, Trainable Neural Networks." MIT. Embodied Intelligence Seminar. Cambridge, MA (Virtual due to COVID-19)	October 2020
E. Atkinson and M. Carbin. "Programming and Reasoning with Partial Observability." International Conference on Object-Oriented Programming, Systems, Languages, and Applications - OOPSLA**	November 2020
T. Chen, J. Frankle, S. Chang, S. Liu, Y. Zhang, Z. Wang, M. Carbin. "The Lottery Ticket Hypothesis for the Pre-trained BERT Networks." Neural Information Processing Systems - NeurIPS**	December 2020
C. Yang, E. Atkinson, and M. Carbin. "Optimizing Dependent Reductions with the Polyhedral Model." Symposium on Principles of Programming Languages - POPL**	January 2021
B. Sherman, J. Michel, M. Carbin. "Computable Semantics for Differentiable Programs with Higher-Order Functions and Datatypes." Symposium on Principles of Programming Languages - POPL**	January 2021
Y. Chen, C. Mendis, M. Carbin, and S. Amarasinghe. "Vegen: A Vectorizer Generator for SIMD and Beyond" Architectural Support for Programming Languages and Operating Systems - ASPLOS (To Appear)	April 2021
J. Frankle, G. K. Dziugaite, Daniel M. Roy, and M. Carbin. "Pruning Neural Networks at Initialization: Why are We Missing the Mark?" International Conference on Learning Representations - ICLR (To Appear) ** arxiv.org/ab...	May 2021

Other major publications

Publication Name and Url	Publication Date
M. Carbin, D. Kim, S. Misailovic, M. C. Rinard. "Verified Integrity Properties for Safe Approximate Program Transformations." Workshop on Partial Evaluation and Program Manipulation, co-located with POPL - PEPM, pp. 63 -- 66. 10.1145/2426...	January 2013
E. Atkinson and M. Carbin. "Towards Correct-by-Construction Probabilistic Inference." NIPS Workshop on Machine Learning Systems **	December 2016
B. Sherman, J. Tramontano, and M. Carbin. "Constructive Probabilistic Semantics with Non-Spatial Locales." Workshop on Probabilistic Program Semantics, co-located with POPL - PPS **	January 2018
E. Atkinson, C. Yang, and M. Carbin. "Verifying Handcoded Probabilistic Inference Procedures." arXiv, 1805.01863 arxiv.org/ab...	2018
M. Carbin. "Overparameterization: A Connection Between Software 1.0 and Software 2.0." Summit on Advances in Programming Languages - SNAPL, pp. 1:1--1:13. drops.dagstu...	May 2019
J. Michel, S. Verma, B. Sherman, and M. Carbin. "Noise-Based Sensitivity Analysis of Programs." Workshop on Approximate Computing, co-located with PLDI - WAX **	June 2019
R. Baghdadi, F. Benhamid, A. Renda, J. Frankle, M. Carbin, and S. Amarasinghe. "Tiramisu: A Polyhedral Compiler for Dense and Sparse Deep Learning." NeurIPS Workshop on Systems for Machine Learning (2019) ** arxiv.org/ab...	December 2019
J. Frankle, G. K. Dziugaite, D. M. Roy, Michael Carbin. "Mode Connectivity and Sparse Neural Networks." NeurIPS Workshop on Science meets Engineering of Deep Learning - SEDL **	December 2019
J. Rosenfeld, J. Frankle, M. Carbin, N. Shavit. "On the Predictability of Pruning Across Scales." International Conference on Machine Learning - ICML (In Submission) ** arxiv.org/ab...	June 2021
E. Atkinson, G. Baudart, L. Mandel, C. Yuan, and M. Carbin. Static Analysis for Provably Bounded-Memory Delayed Sampling of Reactive Probabilistic Programs. Conference on Programming Language Design and Implementation - PLDI (In Submission) **	June 2021

Internal memoranda and progress reports

None

Invited lectures

Publication Name and Url	Publication Date
"Rely: Verifying Quantitative Reliability for Programs that Execute on Unreliable Hardware." National Science Foundation Variability Expedition. Irvine, CA	November 2013
"Reasoning about Approximate Computing." Invited Seminar. Department of Electrical Engineering and Computer Science, University of California, Berkeley. Berkeley, CA	February 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science, University of Chicago. Chicago, IL	February 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science, University of Wisconsin. Madison, WI	February 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science, Columbia University. New York, NY	March 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science and Engineering, University of California, San Diego. San Diego, CA	March 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Electrical and Computer Engineering, University of Texas at Austin. Austin, TX	March 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science, Princeton. Princeton, NJ.	March 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science, University of Pennsylvania. Philadelphia, PA	March 2014

"Reasoning about Approximate Computing." Invited Seminar. Department of Electrical and Computer Engineering, University of Illinois Urbana-Champaign. Urbana-Champaign, IL.	April 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology. Cambridge, MA	April 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science, Georgia Tech. Atlanta, GA	April 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science and Engineering, University of Michigan. Ann Arbor, MI.	April 2014
"Reasoning about Approximate Computing." Microsoft Research, Invited Seminar. Redmond, WA	May 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science, Cornell. Ithaca, NY.	May 2014
"Reasoning about Approximate Computing." Invited Seminar. Department of Computer Science, University of Washington. Seattle, WA	May 2014
"Logical Reasoning for Approximate and Uncertain Computation." Microsoft Faculty Summit. Redmond, WA	July 2015
"Approximate Computing: It's Not Just Good, It's Good Enough!" Keynote. IEEE Workshop on Silicon Errors in Logic – System Effects - SELSE. Boston, MA	March 2017
"From Reliability to Resilience via Program Verification." Software Correctness and Reliability Workshop. ETH Zurich. Zurich, Switzerland.	October 2017
"Research: It takes a Community." Programming Languages Mentoring Workshop, co-located with Conference on Programming Language Design and Implementation - PLMW@PLDI. Philadelphia, PA	June 2018
"Engineering Approximate Computations." Summit on Advances in Programming Languages - SNAPL. Providence, RI.	May 2019
"The Lottery Ticket Hypothesis." AI Horizons Colloquium, IBM AI Week. Cambridge, MA	September 2019
"Engineering Approximate Computations." Systems Seminar. University of Massachusetts, Amherst. Amherst, MA	November 2019
"Engineering Approximate Computations." Interdisciplinary Distinguished Seminar Series. Department of Electrical and Computer Engineering, North Carolina State University. Raleigh, NC	February 2020
"Engineering Approximate Computations." University of Wisconsin, madPL Seminar. Madison, WI (Virtual due to COVID-19)	June 2020
"Research: it Takes a Village." Programming Languages Mentoring Workshop, co-located with Conference on Programming Language Design and Implementation - PLMW@PLDI. London, UK (Virtual due to COVID-19)	June 2020
"Engineering Systems that Learn." Workshop on Machine Learning for Architecture and Systems, co-located with International Conference on Computer Architecture (ISCA). Valencia, Spain (Virtual due to COVID-19)	June 2020
"The Lottery Ticket Hypothesis: Finding Sparse, Trainable Neural Networks." Facebook. Palo Alto, CA (Virtual due to COVID-19)	July 2020
"Engineering Approximate Computations." University of Pennsylvania, CS Colloquium. Philadelphia, PA (Virtual due to COVID-19)	September 2020
"The Lottery Ticket Hypothesis: Finding Sparse, Trainable Neural Networks." MIT Embodied Intelligence Seminar. Cambridge, MA (Virtual due to COVID-19)	October 2020
"Engineering Approximate Computations." Harvard, CS Colloquium. Cambridge, MA (Virtual due to COVID-19)	October 2020

Patents

Serial Number	Patent Number	Patent Description	Filed Date	Issue Date	Patent Status
60/883,742	8,065,687	T. J. Purtell, W. Chun, M. Carbin, "Bypass Virtualization ", US Patent No. 8,065,687	January 2008	November 2011	Issued
60/730,546	8,074,231	G. C. Hunt, J. R. Larus, M. A. Fannrich, O. Hodson, D. R. Tarditi, M. Spear, M. Carbin, S. P. Levi, B. Steensgaard, "Configuration of Isolated Extensions and Device Drivers ", US Patent No. 8,074,231	June 2006	December 2011	Issued

Committee Service

Service Level	Committee Type	Committee Service Description	Start Date	End Date
Department, Lab or Center Level	Graduate Admissions Committee	Sub-Area Chair for the Programming Languages Area. Organized admissions for Programming Languages, including everything from review assignment to the the Visit Day itself.	12/1/2019	4/30/2020
Department, Lab or Center Level	Graduate Admissions Committee	Sub-Area Chair for the Programming Languages Area. Organized admissions for Programming Languages, including everything from review assignment to the the Visit Day itself.	12/1/2018	4/15/2019
Department, Lab or Center Level	Graduate Admissions Committee	Application Shepherd for Underepresented Minority Applications. Duties include, reviewing URM applications, monitoring application status throughout admissions process, reviewer/advisor identification.	12/1/2017	4/15/2018

Department, Lab or Center Level	Graduate Admissions Committee	Application Shepherd for Underepresented Minority Applications. Duties include, reviewing URM applications, monitoring application status throughout admissions process, reviewer/advisor identification.	12/1/2016	4/15/2017
Department, Lab or Center Level	Graduate Admissions Committee	Application Shepherd for Underepresented Minority Applications. Duties include, reviewing URM applications, monitoring application status throughout admissions process, reviewer/advisor identification.	12/1/2015	4/15/2016
Department, Lab or Center Level	Ad Hoc/Other Committee	Member of Sprowls Award Selection Committee. Duties include reviewing nominated theses, participating in technical discussions among committee members, and, finally, participating in decision-making.	10/1/2018	10/31/2018
School, Institute-Wide Level	Special Faculty Committee	Working Group on Faculty Appointments (Regular Member)	2/1/2019	5/30/2019

Other MIT Service

Service Level	Other MIT Service Description	Start Date	End Date
Department, Lab or Center Level	Programming Languages Seminar (Chair)	9/1/2018	12/31/2018
Department, Lab or Center Level	Co-Organizer and Representative for EECS's presence at Tapia Celebration for Diversity, an outreach effort inform and recruit potential URM students. Duties include planning, booth setup and staffing, post-event student CV review.	9/1/2019	9/30/2019
Department, Lab or Center Level	Co-Organizer and Representative for EECS's presence at Tapia Celebration for Diversity, an outreach effort inform and recruit potential URM students. Duties include planning, booth setup and staffing, post-event student CV review.	9/1/2018	9/30/2018

Non-MIT Professional Activities

Professional Service

Organization Name and Description	Role	Start Date	End Date
CGO - International Symposium on Code Generation and Optimization	Program Committee Member	2015	2015
OOPSLA - Conference on Object-Oriented Programming, Systems, Languages, and Applications	Program Committee Member	2016	2016
PLDI - Conference on Programming Language Design and Implementation	Program Committee Member	2016	2016
PLDI - Programming Languages Design and Implementation, Programming Languages Mentoring Workshop	Co-Organizer	12/1/2016	7/1/2017
PLDI - Conference on Programming Language Design and Implementation	External Review Committee Member	2017	2017
CGO - International Symposium on Code Generation and Optimization	Program Committee Member	2017	2017
PLDI - Programming Languages Design and Implementation, Programming Languages Mentoring Workshop.	Lead Co-Organizer	12/1/2017	7/1/2018
ECOOP - European Conference on Object-Oriented Programming	Program Committee Member	2018	2018
SPLASH - Systems, Programming, Languages, and Applications: Software for Humanity, Organization of invitation-only, forward looking research talk track.	SPLASH-I Co-chair (1 of 2)	2018	2018
Workshop on Approximate Computing, Responsibilities include providing guidance on the yearly organization of the Workshop on Approximate Computing	Steering Committee Member	2018	2020
ASPLOS - Architectural Support for Programming Languages and Operating Systems, Organization of technical program, soliciting emerging and aggressive ideas across Computer Architecture, Programming Languages, and Operating Systems.	Co-Chair of Wild and Crazy Ideas (1 of 2)	2018	2018
CGO - International Symposium on Code Generation and Optimization	Program Committee Member	2018	2018

USENIX ATC - USENIX Annual Technical Conference	Program Committee	2018	2018
Computing Research Association, Visioning Workshop on Digital Computing Beyond Moore's Law	Invited Participant	5/3/2018	5/4/2018
National Science Foundation, NSF Software and Hardware Foundations Medium Panel	Invited Panelist	11/1/2018	12/15/2018
CGO - International Symposium on Code Generation and Optimization	Program Committee Member	2019	2019
NSF Workshop on Future Directions for Parallel and Distributed Computing, Visioning workshop to develop next phase of NSF CISE XPS and SPX programs. Attended by 70 leading researchers in fields across Theory, HPC, Programming Languages, Systems, and Computer Architecture. Produced technical report (https://par.nsf.gov/biblio/10127824-future-directions-parallel-distributed-computing-spx-workshop-report) that lead to NSF program on Principle and Practice of Scalable Systems (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505751).	Co-Chair (1 of 2)	2019	2019
SPLASH - Systems, Programming, Languages, and Applications: Software for Humanity, Organization of invitation-only, forward looking research and industry talk track.	Rebase Co-Chair (1 of 2)	2019	2019
EuroSys - European Conference on Computer Systems	Program Committee Member	2019	2019
ASPLOS - Architectural Support for Programming Languages and Operating Systems, Co-organized workshop and tutorial track for conference, organizational conceptualization, program selection, and logistics.	Workshops and Tutorials Co-Chair (1 of 2)	2020	2020
MLSys - Conference on Systems and Machine Learning	Program Committee Member	2020	2020
NeurIPS - Conference on Neural Information Processing Systems	Reviewer	2020	2020
ICML - International Conference on Machine Learning	Reviewer	2020	2020
ASPLOS - International Conference on Architectural Support for Programming Languages and Operating Systems	Program Committee Member	2020	2020
PLDI - Conference on Programming Language Design and Implementation	Program Committee Member	2020	2020
DARPA - Defense Advanced Research Projects Agency	ISAT Committee Member	2020	2023
ICLR - International Conference on Learning Representations	Area Chair	2021	2021
OOPSLA - Conference on Object-Oriented Programming, Systems, Languages, and Applications	Program Committee Member	2021	2021
MLSys - Conference on Systems and Machine Learning	Program Committee Member	2021	2021
ASPLOS - International Conference on Architectural Support for Programming Languages and Operating Systems	Programming Committee Member	2021	2021
POPL - Symposium on Principles of Programming Languages	Program Committee Member	2022	2022

Professional Registration

None

Organizational Memberships

Organization Name and Description	Role	Start Date	End Date
Association for Computing Machinery (ACM)	Member	2015	-
ACM Special Interest Group on Programming Languages (SIGPLAN)	Member	2017	-

Consulting

Organization Name and Description	Role	Start Date	End Date
Microsoft, Research into the application and develop of high-performance, distributed Deep Learning systems.	Researcher	2016	2018