Curriculum Vitae

Hongseok Yang

Current Position

Professor of Computer Science, University of Oxford
and Tutorial Fellow at Worcester College, University of Oxford

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Education

- **Ph.D. in Computer Science** September 1996 — October 2001
  University of Illinois at Urbana-Champaign, USA
  Thesis: Local Reasoning for Stateful Programs Advisor: Uday S. Reddy Viva Date: 11 June 2001
  Cumulative Grade Average: 100%
- **B.S. in Computer Science** March 1992 — February 1996
  Korea Advanced Institute of Science and Technology, Korea
  Minor in Mathematics
  Cumulative Grade Average: 90.5%

Employment History

- **Full Professor** July 2014 — Present
  Department of Computer Science, University of Oxford, UK
- **Tutorial Fellow** October 2011 — Present
  Worcester College, University of Oxford, UK
- **Associate Professor** May 2011 — July 2014
  Department of Computer Science, University of Oxford, UK
  This position used to be called University Lecturer until Dec 2013
- **Senior Research Fellow** May 2011 — September 2011
  Worcester College, University of Oxford, UK
- **Adjunct Professor** February 2008 — January 2010
  Department of Computer Science, Korea Advanced Institute of Science and Technology, Korea
- **Lecturer** October 2006 — April 2011
  School of Electronic Engineering and Computer Science, Queen Mary University of London, UK
  This position corresponds to Assistant Professor in the US
- **Postdoc** December 2003 — August 2006
  Seoul National University, Korea
- **Temporary Lecturer** July 2003 — August 2003
  Department of Computer Science, Korea Advanced Institute of Science and Technology, Korea
- **Postdoc** August 2001 — November 2003
  Korea Advanced Institute of Science and Technology, Korea

Invited (Keynote) Lectures

1. Keynote lecture on "Probabilistic Programming". The 13th Asian Symposium on Programming Languages and Systems (APLAS 2015), Pohang, Korea, December 2015.
2. Distinguished lecture on "How to Find a Good Program Abstraction Automatically?". Max-Planck Institute for Software Systems, Kaiserslautern-Saarbrucken, Germany, March 2014.
3. Invited lecturer of the course "ER04:Separation Logics and Applications". Research Winter School in Computer Science, ENS Lyon, France, February 2011.
4. Invited tutorial on "Separation Logic from the Perspective of Program Analysis". The 7th Asian Symposium on Programming Languages and Systems (APLAS 2009), Seoul, Korea, December 2009.
5. Keynote lecture on "Automatic Verification of Heap-manipulating Programs using Separation Logic". The 4th International Computer Science Symposium in Russia (CSR 2009), Novosibirsk, Russia, August 2009.
6. Invited lecturer of the course "Separation Logic for Higher-order Programs". Fall PhD School on "Types, Logics and Semantics for State", IT University of Copenhagen, Copenhagen, Denmark, October 2008.
7. Invited lecturer of the course "Program Verification using Separation Logic". Microsoft Research Summer School on Programming Languages and Tools, Microsoft Bangalore, India, June 2008.
8. Keynote lecture on "On Scalable Shape Analysis". The 3rd International Workshop on Systems Software Verification (SSV 2008), Sydney, Australia, February 2008.
9. Keynote lecture on "On Scalable Shape Analysis". The 1st York Doctoral Symposium (YDS 2007), York, UK, October 2007.
10. Keynote lecture on "Footprint Analysis: A Shape Analysis that Discovers Preconditions". The 1st Workshop on Heap Analysis and Verification (HAV 2007), Braga, Portugal, March 2007.
11. Keynote lecture on "Towards Shape Analysis for Device Drivers". The 8th International Conference on Verification, Model Checking and Abstract Interpretation (VMCAI 2007), Nice, France, January 2007.
12. Keynote lecture on "Shape Analysis for Low-level Code". The 13th International Static Analysis Symposium (SAS 2006), Seoul, Korea, August 2006.

Publications

Journal Papers

1. Hila Peleg, Sharon Shoham, Eran Yahav, and Hongseok Yang. Symbolic Automata for Representing Big Code, Acta Informatica, 53(4):327-356, 2016.
2. Hakjoo Oh, Wonchan Lee, Kihong Heo, Hongseok Yang, and Kwangkeun Yi. Selective X-Sensitivity Guided by Impact Pre-Analysis. ACM Transactions on Programming Languages and Systems, 38(2), Article No 6, 2016.
3. Alexey Gotsman and Hongseok Yang. Modular Verification of Preemptive OS Kernels, Journal of Functional Programming, 23(4):452-514, 2013.
4. Alexey Gotsman and Hongseok Yang. Linearizability with Ownership Transfer, Logical Methods in Computer Science, 9(3:12), 2013.

5. Jan Schwinghammer, Lars Birkedal, François Pottier, Bernhard Reus, Kristian Stovring, and Hongseok Yang. A Step-Indexed Kripke Model of Hidden State. Mathematical Structures in Computer Science, 23(1):1–54, February 2013.
6. Jacob Thamsborg, Lars Birkedal, and Hongseok Yang. Two for the Price of One: Lifting Separation Logic Assertions. Logical Methods in Computer Science, 8(3:22), 2012.
7. Oukseh Lee, Hongseok Yang, and Rasmus Petersen. A divide-and-conquer approach for analysing overlaid data structures. Formal Methods in System Design, Springer-Verlag, April 2012.
8. Cristiano Calcagno, Dino Distefano, Peter W. O'Hearn, and Hongseok Yang. Compositional Shape Analysis by means of Bi-abduction. Journal of the ACM, 58(6), ACM, December 2011.
9. Jan Schwinghammer, Lars Birkedal, Bernhard Reus, and Hongseok Yang. Nested Hoare Triples and Frame Rule for Higher-order Store. Logical Methods in Computer Science, 7(3:21), 2011.
10. Ivana Filipović, Peter W. O'Hearn, Noam Rinetzky, and Hongseok Yang. Abstraction for Concurrent Objects. Theoretical Computer Science, 411(51-52):4379–4398, Elsevier, 2010.
11. Ivana Filipović, Peter W. O'Hearn, Noah Torp-Smith, and Hongseok Yang. Blaming the Client: On Data Refinement in the Presence of Pointers. Formal Aspects of Computing, 22(5):547–583, 2010.
12. Peter W. O'Hearn, Hongseok Yang, and John Reynolds. Separation and Information Hiding. ACM Transactions on Programming Languages and Systems, 31(3), February 2009.
13. Lars Birkedal and Hongseok Yang. Relational Parametricity and Separation Logic. Logical Methods in Computer Science, 4(2:6), 2008.
14. Sunae Seo, Hongseok Yang, Kwangkeun Yi, and Taisook Han. Goal-directed Weakening of Abstract Interpretation Results. ACM Transactions on Programming Languages and Systems, 29(6), October 2007.
15. Hongseok Yang. Relational Separation Logic. Theoretical Computer Science, 375(1-3):308–334, Festschrift in honor of John C. Reynolds's 70th Birthday, Elsevier, May 2007.
16. Lars Birkedal, Noah Torp-Smith, and Hongseok Yang. Semantics of Separation-logic Typing and Higher-order Frame Rules for Algol-like Languages. Logical Methods in Computer Science, 2(5:1), October 2006.
17. Oukseh Lee, Hongseok Yang, and Kwangkeun Yi. Static Insertion of Safe and Effective Memory Reuse Commands into ML-like Programs. Science of Computer Programming, 58(1-2):141–178, Elsevier, October 2005.
18. David Pym, Peter W. O'Hearn, and Hongseok Yang. Possible Worlds and Resources: The Semantics of BI. Theoretical Computer Science, 315(1):257–305, Elsevier, May 2004.
19. Uday S. Reddy and Hongseok Yang. Correctness of Data Representations involving Heap Data Structures. Science of Computer Programming, 50(1-3):129–160, Elsevier, March 2004.

Conference Papers

1. Chris Heunen, Ohad Kammar, Sam Staton, and Hongseok Yang. A Convenient Category for Higher-Order Probability Theory. In Proceedings of the 32nd Annual ACM/IEEE Symposium on Logic in Computer Science (LICS 2017), June 2017.
2. David Tolpin, Jan-Willem van de Meent, Hongseok Yang, and Frank Wood. Design and Implementation of Probabilistic Programming Language Anglican. In Post-symposium Proceedings of the 28th Symposium on Implementation and Application of Functional Languages (IFL 2016), February 2017.

3. Kihong Heo, Hakjoo Oh, and Hongseok Yang. Learning a Variable-Clustering Strategy for Octagon from Labeled Data Generated by a Static Analysis. In Proceedings of the 23rd International Static Analysis Symposium (SAS 2016), volume 9837 of Lecture Notes in Computer Science, pages 237–256, Springer-Verlag, September 2016.

4. Hagit Attiya, Sebastian Burckhardt, Alexey Gotsman, Adam Morrison, Hongseok Yang, and Marek Zawirski. Specification and Complexity of Collaborative Text Editing. In Proceedings of the 35th Annual ACM Symposium on Principles of Distributed Computing (PODC 2016), July 2016.

5. Sam Staton, Hongseok Yang, Chris Heunen, Ohad Kammar, and Frank Wood. Semantics of Probabilistic Programming: Higher-order Functions, Continuous Distributions, and Soft Constraints. In Proceedings of the 31st Annual ACM/IEEE Symposium on Logic in Computer Science (LICS 2016), July 2016.

6. Alexey Gotsman, Hongseok Yang, Carla Ferreira, Mahsa Najafzadeh, and Marc Shapiro. 'Cause I'm Strong Enough: Reasoning about Consistency Choices in Distributed Systems. In Proceedings of the 43rd ACM Symposium on Principles of Programming Languages (POPL 2016), pages 371–384, ACM, January 2016.

7. Radu Grigore and Hongseok Yang. Abstraction Refinement Guided by a Learnt Probabilistic Model. In Proceedings of the 43rd ACM Symposium on Principles of Programming Languages (POPL 2016), pages 485–498, ACM, January 2016.

8. Hakjoo Oh, Hongseok Yang, and Kwangkeun Yi. Learning a Strategy for Adapting a Program Analysis via Bayesian Optimisation. In Proceedings of the 2015 ACM International Conference on Object Oriented Programming Systems Languages and Applications (OOPSLA 2015), pages 572–588, ACM, October 2015.

9. Andrea Cerone, Alexey Gotsman, and Hongseok Yang. Transaction Chopping for Parallel Snapshot Isolation. In Proceedings of the 29th International Symposium on Distributed Computing (DISC 2015), volume 9363 of Lecture Notes in Computer Science, pages 388–404, Springer-Verlag, October 2015.

10. Ghila Castelnuovo, Mayur Naik, Noam Rinetzky, Mooly Sagiv, and Hongseok Yang. Modularity in Lattices: A Case Study on the Correspondence between Top-Down and Bottom-Up Analysis, In Proceedings of the 22nd International Static Analysis Symposium (SAS 2015), volume 9291 of Lecture Notes in Computer Science, pages 252–274, Springer-Verlag, September 2015.

11. Jan-Willem van de Meent, Hongseok Yang, Vikash Mansinghka, and Frank Wood. Particle Gibbs with Ancestor Sampling for Probabilistic Programs. In Proceedings of the 18th International Conference on Artificial Intelligence and Statistics (AISTATS 2015), May 2015.

12. Alexey Gotsman and Hongseok Yang. Composite Replicated Data Type. In Proceedings of the 24th European Symposium on Programming (ESOP 2015), volume 9032 of Lecture Notes in Computer Science, pages 585–609, Springer-Verlag, April 2015.

13. Andrea Cerone, Alexey Gotsman, and Hongseok Yang. Parameterised Linearizability. In Proceedings of the 41st International Colloquium on Automata, Languages and Programming (ICALP 2014), volume 8573 of Lecture Notes in Computer Science, pages 98–109, Springer-Verlag, July 2014.

14. Xin Zhang, Ravi Mangal, Radu Grigore, Mayur Naik, and Hongseok Yang. On Abstraction Refinement for Program Analyses in Datalog. In Proceedings of the 35th annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI 2014), 27, ACM, June 2014. **(Distinguished Paper Award)**

15. Xin Zhang, Ravi Mangal, Mayur Naik, and Hongseok Yang. Hybrid Top-down and Bottom-up Interprocedural Analysis. In Proceedings of the 35th annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI 2014), 28, ACM, June 2014.

16. Hakjoo Oh, Wonchan Lee, Kihong Heo, Hongseok Yang, and Kwangkeun Yi. Selective Context-Sensitivity Guided by Impact Pre-Analysis. In Proceedings of the 35th annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI 2014), 49, ACM, June 2014.

17. Ravi Mangal, Mayur Naik, and Hongseok Yang. A Correspondence between Two Approaches to Interprocedural Analyses in the Presence of Join. In Proceedings of the 23rd European Symposium on Programming (ESOP 2014), volume 8410 of Lecture Notes in Computer Science, pages 513–533, Springer-Verlag, April 2014. **(Best Paper Award Nominee)**

18. Sebastian Burckhardt, Alexey Gotsman, Hongseok Yang, and Marek Zawirski. Replicated Data Types: Specification, Verification, Optimality. In Proceedings of the 41th ACM Symposium on Principles of Programming Languages (POPL 2014), pages 271–284, ACM, January 2014.

19. Hila Peleg, Sharon Shoham, Eran Yahav, and Hongseok Yang. Symbolic Automata for Static Specification Mining, In Proceedings of the 20th International Static Analysis Symposium (SAS 2013), volume 7935 of Lecture Notes in Computer Science, pages 63–83, Springer-Verlag, June 2013.

20. Xin Zhang, Ravi Mangal, Mayur Naik, and Hongseok Yang. Finding Optimum Abstractions in Parametric Dataflow Analysis, In Proceedings of the 34th annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI 2013), pages 365–376, ACM, June 2013.

21. Alexey Gotsman, Noam Rinetzky, and Hongseok Yang. Verifying Concurrent Memory Reclamation Algorithms with Grace, In Proceedings of the 22nd European Symposium on Programming (ESOP 2013), volume 7792 of Lecture Notes in Computer Science, pages 249–269, Springer-Verlag, March 2013. **(EASST & EATCS Best Paper Runner-up)**

22. Thomas Dinsdale-Young, Lars Birkedal, Philippa Gardner, Matthew Parkinson, and Hongseok Yang. Views: Compositional Reasoning for Concurrent Programs. In Proceedings of the 40th ACM Symposium on Principles of Programming Languages (POPL 2013), pages 287–300, ACM, January 2013.

23. Saswat Anand, Mayur Naik, Hongseok Yang, and Mary Jean Harrold. Automated Concolic Testing of Smartphone Apps. In Proceedings of the 20nd International Symposium on the Foundations of Software Engineering (FSE 2012), 59, November 2012.

24. Alexey Gotsman, Madanlal Musuvathi, and Hongseok Yang. Show No Weakness: Sequentially Consistent Specifications of TSO Libraries. In Proceedings of the 26th International Symposium on Distributed Computing (DISC 2012), volume 7611 of Lecture Notes in Computer Science, pages 31–45, Springer-Verlag, October 2012.

25. Alexey Gotsman and Hongseok Yang. Linearizability with Ownership Transfer. In Proceedings of the 23rd International Conference on Concurrency Theory (CONCUR 2012), volume 7454 of Lecture Notes in Computer Science, pages 256–271, Springer-Verlag, September 2012. **(Best Paper Award)**

26. Sebastian Burckhardt, Alexey Gotsman, Madanlal Musuvathi, and Hongseok Yang. Concurrent library correctness on the TSO memory model. In Proceedings of the 21st European Symposium on Programming (ESOP 2012), volume 7211 of Lecture Notes in Computer Science, pages 87–107, Springer-Verlag, March 2012.

27. Mayur Naik, Hongseok Yang, Ghila Castelnuovo, and Mooly Sagiv. Abstractions from Tests. In Proceedings of the 39th ACM Symposium on Principles of Programming Languages (POPL 2012), pages 373–386, ACM, January 2012.

28. Alexey Gotsman and Hongseok Yang. Modular Verification of Preemptive OS Kernels. In Proceedings of the 16th ACM SIGPLAN International Conference on Functional Programming (ICFP 2011), pages 404–417, ACM, September 2011.

29. Oukseh Lee, Hongseok Yang, and Rasmus Petersen. Program Analysis for Overlaid Data Structures. In Proceedings of the 23rd International Conference on Computer Aided Verification (CAV 2011), volume 6806 of Lecture Notes in Computer Science, pages 592–608, Springer-Verlag, July 2011.

30. Alexey Gotsman and Hongseok Yang. Liveness-preserving Atomicity Abstraction. In Proceedings of the 38th International Colloquium on Automata, Languages and Programming (ICALP 2011), volume 6756 of Lecture Notes in Computer Science, pages 453–465, Springer-Verlag, July 2011.

31. Lars Birkedal, Bernhard Reus, Jan Schwinghammer, Kristian Støvring, Jacob Thamsborg, and Hongseok Yang. Step-Indexed Kripke Models over Recursive Worlds. In Proceedings of the 38th ACM Symposium on Principles of Programming Languages (POPL 2011), pages 119–132, ACM, January 2011.

32. Aziem Chawdhary and Hongseok Yang. Metric Spaces and Termination Analyses. In Proceedings of the 8th Asian Symposium on Programming Languages and Systems (APLAS 2010), volume 6461 of Lecture Notes in Computer Science, pages 156–171, Springer-Verlag, November 2010.

33. Jab Schwinghammer, Hongseok Yang, Lars Birkedal, François Pottier, and Bernhard Reus. A Semantic Foundation for Hidden State. In Proceedings of the 13th Conference on Foundations of Software Science and Computation Structures (FOSSACS 2010), volume 6014 of Lecture Notes in Computer Science, pages 2–17, Springer-Verlag, March 2010.

34. Jan Schwinghammer, Lars Birkedal, Bernhard Reus, and Hongseok Yang. Nested Hoare Triples and Frame Rule for Higher-order Store, In Proceedings of the 18th EACSL Annual Conference on Computer Science Logic (CSL 2009), volume 5771 of Lecture Notes in Computer Science, pages 440–454, Springer-Verlag, September 2009.

35. Ivana Filipović, Peter W. O'Hearn, Noam Rinetzky, and Hongseok Yang. Abstraction for Concurrent Objects. In Proceedings of the 18th European Symposium on Programming (ESOP 2009), volume 5502 of Lecture Notes in Computer Science, pages 252–266, Springer-Verlag, April 2009.

36. Cristiano Calcagno, Dino Distefano, Peter W. O'Hearn, and Hongseok Yang. Compositional Shape Analysis by means of Bi-abduction. In Proceedings of the 36th ACM Symposium on Principles of Programming Languages (POPL 2009), pages 289–300, ACM, January 2009.

37. Lars Birkedal, Bernhard Reus, Jan Schwinghammer, and Hongseok Yang. A Simple Model of Separation Logic for Higher-order Store. In Proceedings of the 35th International Colloquium on Automata, Languages and Programming (ICALP 2008), volume 5126 of Lecture Notes in Computer Science, pages 348–360, Springer-Verlag, July 2008.

38. Hongseok Yang, Oukseh Lee, Josh Berdine, Cristiano Calcagno, Byron Cook, Dino Distefano, and Peter W. O'Hearn. Scalable Shape Analysis For Systems Code. In Proceedings of the 20th International Conference on Computer Aided Verification (CAV 2008), volume 5123 of Lecture Notes in Computer Science, pages 385–398, Springer-Verlag, July 2008.

39. Aziem Chawdhary, Byron Cook, Sumit Gulwani, Mooly Sagiv, and Hongseok Yang. Ranking Abstractions. In Proceedings of the 17th European Symposium on Programming (ESOP 2008), volume 4960 of Lecture Notes in Computer Science, pages 148–162, Springer-Verlag, April 2008.

40. Cristiano Calcagno, Dino Distefano, Peter W. O'Hearn, and Hongseok Yang. Footprint Analysis: A Shape Analysis that Discovers Preconditions. In Proceedings of the 14th International Static Analysis Symposium (SAS 2007), volume 4634 of Lecture Notes in Computer Science, pages 402–418, Springer-Verlag, August 2007.

41. Josh Berdine, Cristiano Calcagno, Byron Cook, Dino Distefano, Peter W. O'Hearn, Thomas Wies, and Hongseok Yang. Shape Analysis for Composite Data Structures. In Proceedings of the 19th International Conference on Computer Aided Verification (CAV 2007), volume 4590 of Lecture Notes in Computer Science, pages 178–192, Springer-Verlag, July 2007.

42. Cristiano Calcagno, Peter W. O'Hearn, and Hongseok Yang. Local Action and Abstract Separation Logic. In Proceedings of the 22nd Annual IEEE Symposium on Logic in Computer Science (LICS 2007), pages 366–378, IEEE, July 2007.

43. Lars Birkedal and Hongseok Yang. Relational Parametricity and Separation Logic. In Proceedings of the 10th Conference on Foundations of Software Science and Computation Structures (FOSSACS 2007), volume 4423 of Lecture Notes in Computer Science, pages 93–107, Springer-Verlag, March 2007.

44. Cristiano Calcagno, Dino Distefano, Peter W. O'Hearn, and Hongseok Yang. Beyond Reachability: Shape Abstraction in the Presence of Pointer Arithmetic. In Proceedings of the 13th International Static Analysis Symposium (SAS 2006), volume 4134 of Lecture Notes in Computer Science, pages 182–203, Springer-Verlag, August 2006.

45. Richard Bornat, Cristiano Calcagno, and Hongseok Yang. Variables as Resource in Separation Logic. In Proceedings of the 21st Annual Conference on Mathematical Foundations of Programming Semantics, volume 155 of Electronic Notes in Theoretical Computer Science (MFPS 2005), pages 247-276, Elsevier, May 2006.

46. Dino Distefano, Peter W. O'Hearn, and Hongseok Yang. A Local Shape Analysis based on Separation Logic. In Proceedings of the 12th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2006), volume 3920 of Lecture Notes in Computer Science, pages 287-302, Springer-Verlag, April 2006.

47. Ivana Mijajlović and Hongseok Yang. Data Refinements with Low-level Pointer Operations In Proceedings of the 3rd Asian Symposium on Programming Languages and Systems (APLAS 2005), volume 3780 of Lecture Notes in Computer Science, pages 19-36, Springer-Verlag, November 2005.

48. Lars Birkedal, Noah Torp-Smith, and Hongseok Yang. Semantics of Separation-logic Typing and Higher-order Frame Rules. In Proceedings of the 20th Annual IEEE Symposium on Logic in Computer Science (LICS 2005), pages 260–269, IEEE, June 2005.

49. Oukseh Lee, Hongseok Yang, and Kwangkeun Yi. Automatic Verification of Pointer Programs Using Grammar-Based Shape Analysis. In Proceedings of the 14th European Symposium on Programming (ESOP 2005), volume 3444 of Lecture Notes in Computer Science, pages 124–140, Springer-Verlag, April 2005.

50. Peter W. O'Hearn, Hongseok Yang, and John C. Reynolds. Separation and Information Hiding. In Proceedings of the 31st ACM Symposium on Principles of Programming Languages (POPL 2004), pages 268–280, ACM, January 2004.

51. Sunae Seo, Hongseok Yang, and Kwangkeun Yi. Automatic Construction of Hoare Proofs from Abstract Interpretation Results. In Proceedings of the 1st Asian Symposium on Programming Languages and Systems (APLAS 2003), volume 2895 of Lecture Notes in Computer Science, pages 230-245, Springer-Verlag, September 2003.

52. Oukseh Lee, Hongseok Yang, and Kwangkeun Yi. Inserting Safe Memory Re-use Commands into ML-like Programs. In Proceedings of the 10th International Static Analysis Symposium (SAS 2003), volume 2694 of Lecture Notes in Computer Science, pages 171–188, Springer-Verlag, June 2003.

53. Uday S. Reddy and Hongseok Yang. Correctness of Data Representations involving Heap Data Structures. In Proceedings of the 12th European Symposium on Programming (ESOP 2003), volume 2618 of Lecture Notes in Computer Science, pages 223–237, Springer-Verlag, April 2003.

54. Hongseok Yang and Peter W. O'Hearn. A Semantic Basis for Local Reasoning. In Proceedings of the 5th Conference on Foundations of Software Science and Computation Structures (FOSSACS 2002), volume 2303 of Lecture Notes in Computer Science, pages 402–416, Springer-Verlag, April 2002.

55. Cristiano Calcagno, Hongseok Yang, and Peter W. O'Hearn. Computability and Complexity Results for a Spatial Assertion Language for Data Structures. In Proceedings of the 21st Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2001), volume 2245 of Lecture Notes in Computer Science, pages 108–119, Springer-Verlag, December 2001.

56. Peter W. O'Hearn, John C. Reynolds, and Hongseok Yang. Local Reasoning about Programs that Alter Data Structures. In Proceedings of the 15th Annual Conference of the European Association for Computer Science Logic (CSL 2001), volume 2142 of Lecture Notes in Computer Science, pages 1–19, Springer-Verlag, September 2001.

57. Hongseok Yang and Uday S. Reddy. On the Semantics of Refinement Calculi. In Proceedings of the 3rd Conference on Foundations of Software Science and Computation Structures (FOSSACS 2000), volume 1784 of Lecture Notes in Computer Science, pages 359–374, Springer-Verlag, April 2000.
58. Hongseok Yang and Howard Huang. Type Reconstruction for Syntactic Control of Interference, Part 2. In Proceedings of the 1998 International Conference on Computer Languages (ICCL 1998), pages 164–173, IEEE, May 1998.

Workshop Papers and Technical Reports

1. Sam Staton, Hongseok Yang, Nathanael Ackerman, Cameron Freer, and Daniel M. Roy. Exchangeable Random Processes and Data Abstraction. In Proceedings of the 2nd Workshop on Probabilistic Programming Semantics (PPS 2017), January 2017.
2. Robert Cornish, Frank Wood, and Hongseok Yang. Efficient Exact Inference in Discrete Anglican Programs. In Proceedings of the 2nd Workshop on Probabilistic Programming Semantics (PPS 2017), January 2017.
3. Tom Rainforth, Robert Cornish, Hongseok Yang, and Frank Wood. On the Pitfalls of Nested Monte Carlo. In Proceedings of the NIPS Workshop on Advances in Approximate Bayesian Inference 2016, December 2016.
4. Sam Staton, Hongseok Yang, Chris Heunen, Ohad Kammar, and Frank Wood. Semantics of Higher-order Probabilistic Programs. In Proceedings of the 1st Workshop on Probabilistic Programming Semantics (PPS 2016), January 2016.
5. Mahsa Najafzadeh, Alexey Gotsman, Hongseok Yang, Carla Ferreira, and Marc Shapiro. The CISE tool: proving weakly-consistent applications correct. In Proceedings of the 2nd Workshop on the Principles and Practice of Consistency for Distributed Data (PaPoC@EuroSys 2016), April 2016.
6. Sam Staton, Hongseok Yang, Chris Heunen, Ohad Kammar, and Frank Wood. Semantics of Higher-order Probabilistic Programs. In Proceedings of the 1st Workshop on Probabilistic Programming Semantics (PPS 2016), January 2016.
7. Hongseok Yang. An Example of Local Reasoning in BI pointer logic: the Schorr-Waite Graph Marking Algorithm. In Proceedings of the 1st Workshop on Semantics, Program Analysis, and Computing Environments for Memory Management, January 2001.
8. Hongseok Yang. Local Reasoning for Stateful Programs. Ph.D Thesis, Technical Report UIUCDCS-R-2001-2227, Department of Computer Science, University of Illinois at Urbana-Champaign, June 2001.

Tool Development and Industrial Collaboration

1. ABDUCTOR. Tool for automatically inferring heap-related Hoare-style specifications for C programs.
2. SPACEINVADER. Automatic pointer-safety prover for C programs based on separation logic.
3. LINEARRANKTERM. Tool for automatically proving the termination of C programs.
4. Consultant to Invrea, a startup company for spreadsheet data analytics. November 2015 — September 2016.
5. Advisor to Monoidics, a software verification startup company (which was aquired by Facebook in September 2013). 2009 — August 2013.

Honors and Awards

1. CAV Award, July 2016. Received with Josh Berdine, Cristiano Calcagno, Dino Distefano, Samin Ishiaq, Peter O'Hearn, and John Reynolds for our contributions on the development and automation of separation logic.
2. Distinguished Paper Award in PLDI 2014, June 2014.
3. Best Paper Award Nominee in ESOP 2014, April 2014.
4. EASST & EATCS Best Paper Runner-up in ESOP 2013, April 2013.
5. Best Paper Award in CONCUR 2012, September 2012.
6. Nominated for the 2009 Drapers' Awards for Excellence in Teaching, May 2009.
7. Finalist for Times Higher Education Award 2008 for Research Project of the Year, September 2008.
8. EPSRC Advanced Research Fellowship, October 2007 — September 2012.
9. Scholarship from the Korea Foundation for Advanced Studies, September 1997 — May 2001.
10. Scholarship from Noyup Culture Foundation, March 1993 — December 1995.
11. Full Scholarship from Korea Advanced Institute of Science and Technology, March 1992 — December 1995.

Press Coverage

1. THE Awards 2008: Research Project of the Year. Times Higher Education Magazine, Issue 25 September - 1 October 2008.

Funding

1. Development of Vulnerability Discovery Technologies for IoT Software Security. Ministry of Science, ICT and Future Planning, Korea. August 2015 — July 2018. 3B KRW. Co-Investigator.
2. Resource Reasoning. EPSRC Programme Grant, UK. January 2010 — December 2015. 3.2M GBP. Co-Investigator.
3. Scalable Program Analysis for Software Verification. EPSRC Advanced Research Fellowship, UK. October 2007 — September 2012. 445K GBP. PI.
4. Program Verification Methods for Object-oriented Languages. Basic Research Program of Korea Science & Engineering Foundation, Korea. July 2003 — April 2006. 75M KRW. PI.

Professional Activities

Program Committees

1. Reviewer for *the 31st Annual Conference on Neural Information Processing Systems* (NIPS 2017).
2. Reviewer for *the 34th International Conference on Machine Learning* (ICML 2017).
3. External Program Committee Member for *the 2017 ACM Conference on Programming Language Design and Implementation* (PLDI 2017).
4. PC Chair for *the 26th European Symposium on Programming* (ESOP 2017).

5. External Review Committee Member for *the 43rd ACM Symposium on Principles of Programming Languages* (POPL 2017).
6. PC Member for *the 22nd International Static Analysis Symposium* (SAS 2015).
7. PC Member for *the 24th European Symposium on Programming* (ESOP 2015).
8. External Review Committee Member for *the 42nd ACM Symposium on Principles of Programming Languages* (POPL 2015).
9. PC Member for *the 28th European Conference on Object-Oriented Programming* (ECOOP 2014).
10. PC Co-chair for *the 3rd ACM Workshop on Higher-Order Programming with Effects* (HOPE 2014).
11. PC Co-chair for *the 2nd ACM Workshop on Higher-Order Programming with Effects* (HOPE 2013).
12. PC Member for *the 20th International Static Analysis Symposium* (SAS 2013).
13. PC Member for *the 26th European Conference on Object-Oriented Programming* (ECOOP 2012).
14. PC Chair for *the 9th Asian Symposium on Programming Languages and Systems* (APLAS 2011).
15. PC Member for *the 18th International Static Analysis Symposium* (SAS 2011).
16. PC Member for *the 38th ACM Symposium on Principles of Programming Languages* (POPL 2011).
17. PC Member for *the 1st Workshop on Tools for Automatic Program Analysis* (TAPAS 2010).
18. PC Member for *the 11th International Conference on Verification, Model Checking, and Abstract Interpretation* (VMCAI 2010).
19. PC Member for *the 14th International Workshop on Formal Methods for Industrial Critical Systems* (FMICS 2009).
20. PC Member for *the 24th Annual IEEE Symposium on Logic in Computer Science* (LICS 2009).
21. External Review Committee for *the 2009 ACM Conference on Programming Language Design and Implementation* (PLDI 2009).
22. PC Member for *the 6th Asian Symposium on Programming Languages and Systems* (APLAS 2008).
23. PC Member for *the 27th Conference on Foundations of Software Technology and Theoretical Computer Science* (FSTTCS 2007).
24. PC Member for *the 4th International Colloquium on Theoretical Aspects of Computing* (ICTAC 2007).
25. PC Member for *the 8th International Conference on Formal Engineering Methods* (ICFEM 2006).
26. PC Member for *the Second Workshop on Semantics, Program Analysis and Computing Environments for Memory Management* (SPACE 2004).

Organization

1. Co-organizer for *the 5th Workshop on Tools for Automatic Program Analysis* (TAPAS 2014).
2. Theory Workshop Co-chair for *the 3rd IFIP Working Conference on Verified Software: Theories, Tools, and Experiments* (VSTTE 2010).
3. Co-organizer for *Frontiers of Computational Reasoning*, Microsoft Research Cambridge, UK, 19-20 March 2009.
4. Organizer of Computer Science Departmental Seminar at University of Oxford. October 2011 — September 2012.
5. Organizer of Queen Mary/Imperial Joint Theory Seminar. July 2008 — January 2011.
6. Poster Chair for *the 3rd Asian Symposium on Programming Languages and Systems* (APLAS 2005).

External PhD Examination

1. Gian Ntzik. Reasoning about POSIX File Systems. Imperial College, UK, February 2017. External Examiner.
2. Matko Botinçan. Formal verification-driven parallelisation synthesis. University of Cambridge, UK, January 2014. External Examiner.
3. Chenguang Luo. Verification of pointer-based programs with partial information. Durham University, UK, December 2010. External Examiner.
4. Alexey Gotsman. Logics and analyses for concurrent heap-manipulating programs. University of Cambridge, UK, October 2009. External Examiner.
5. Nina Bohr. Advances in Reasoning Principles for Contextual Equivalence and Termination. IT University of Copenhagen, Denmark, December 2007. Member of Evaluation Committee.
6. Élodie-Jane Sims. Pointer Analysis and Separation Logic. École Polytechnique, France, December 2007. Reviewer.

Internal PhD Examination

1. Emanuele D'Osualdo. Verification of Message Passing Concurrent Systems, University of Oxford, UK, August 2015.
2. Steven Ramsey. Intersection Types and Higher-Order Model Checking, University of Oxford, UK, February 2014.
3. David Hopkins. Game Semantics Based Equivalence Checking of Higher-Order Programs. University of Oxford, UK, November 2012.

Teaching and Research Supervision

Advanced Research Seminar Series

1. *Probabilistic Programming Reading Group*, University of Oxford, August 2015 — September 2016.
    - Together with Radu Grigore and Siddharth Narayanaswamy, I organised this research seminar series, which aims at creating an active informal forum where researchers from different backgrounds (such as programming languages, machine learning and statistics) get together weekly and discuss about recent advances on probabilistic programming.

2. *Machine Learning Lunch*, University of Oxford, October 2014 — June 2015.
    - This seminar series was organised by me and colleagues from the Engineering, Statistics, and Computer Science departments at the University of Oxford. It aimed at advancing collaboration between these departments on machine learning and artificial intelligence, by way of informal meetings.
3. *Machine Learning Techniques for Program Analysis*, University of Oxford, August 2012 — November 2012.
    - I ran this informal research seminar series on the use of machine learning techniques in program analysis. My aim was to study recent research results on this topic, and also to bring together people in the department who shared the same interest. We had a weekly meeting where one volunteer gave a whiteboard presentation on a recent research paper. These meetings were usually attended by 3-4 faculty members, 2-3 postdocs, and 1-2 DPhil students.

Graduate Courses Taught

1. Graduate Course on *Program Anlaysis*, University of Oxford, Spring 2016.
2. MS Course on *Specification and Verification* (AMCM049), Queen Mary University of London, Spring 2010.
3. MS Course on *Specification and Verification* (AMCM049), Queen Mary University of London, Spring 2009.
4. Graduate Course on *Program Verification using Separation Logic* (CS720), Korea Advanced Institute of Science and Technology, Korea, Summer 2003.

Undergraduate Courses Taught

1. Undergraduate Course on *Imperative Programming 2*, University of Oxford, Summer 2013, 2014, and 2015.
2. Undergraduate Course on *Essential Networks and Operating Systems* (DCS200), Queen Mary University of London, Fall 2007.
3. Undergraduate Course on *Further Networks and Operating Systems* (DCS201), Queen Mary University of London, Spring 2007.

Taught Tutorials on Undergraduate Courses

1. Tutorial on *Object Oriented Programming*, University of Oxford, Fall 2011, 2012, 2013, 2014, and 2015.
2. Tutorial on *Imperative Programming 2*, University of Oxford, Summer 2012, Summer 2013, 2014, 2015, and 2016.
3. Tutorial on *Imperative Programming 1*, University of Oxford, Spring 2012, Spring 2013, 2014, 2015, and 2016.
4. Tutorial on *Functional Programming*, University of Oxford, Fall 2011, 2012, 2013, 2014, and 2015.
5. Tutorial on *Linear Algebra*, University of Oxford, Fall 2011.

Supervision of Postdocs

1. Radu Grigore, Postdoc, University of Oxford. June 2013 — December 2015. Currently lecturer (assistant professor) at the University of Kent, UK.
2. Oukseh Lee, Postdoc, Queen Mary University of London. July 2010 — July 2011. Currently CTO at Codemind Corporation, Korea.

Supervision of PhD/MS Students

1. Yuan Zhou, PhD student, University of Oxford. October 2016 — Present. Co-supervised by Sam Staton and Frank Wood.
2. Rob Cornish, PhD student, University of Oxford. October 2015 — Present. Co-supervised by Frank Wood.
3. Junghun Yoo, PhD student, University of Oxford. October 2015 — Present.
4. Aziem Chawdhary. PhD 2010, Queen Mary University of London. Co-advised by Peter O'Hearn. Currently research associate at the University of Kent, UK
5. Sunae Seo, PhD 2007, Korea Advanced Institute of Science and Technology, Korea. Co-advised by Kwangkeun Yi. Currently senior engineer at Samsung Electronics, Korea.
6. Sudakshina Das, MS Student, University of Oxford, November 2013 — August 2014. Currently Software Engineer at Ericsson, UK.
7. Karthik Parthasarathi, MS student, Queen Mary University of London. Completed in 2009. Currently Solutions Architect at Barclays Corporate Banking.

Supervision of Visiting PhD/MS Students

1. Alexandre Buisse. PhD Student, IT University of Copenhagen, Denmark. February 2010 — June 2010.
2. Dongho Kim. PhD Student, Korea Advanced Institute of Science and Technology, Korea. February 2010 — March 2010.
3. Kwonsoo Chae. MS Student, Korea University, Korea. January 2017 — January 2017.
4. Sunbeom So. MS Student, Korea University, Korea. January 2017 — January 2017.
5. Raphaël Monat. MS Student, ENS Lyon, France. May 2016 — July 2016.
6. Raphaël Monat. MS Student, ENS Lyon, France. May 2016 — July 2016.
7. Jaesang Oh. MS Student, Korea University, Korea. January 2016 — February 2016.
8. Diane Gallois-Wong, MS Student, ENS Paris, France. March 2015 — July 2015.
9. Seung-Cheol Jung. MS Student, Hanyang University, Korea. July 2007 — August 2007.

Supervision of Undergraduate Projects

1. Xingan Zhao, 4th-year Math and CS Student, University of Oxford, June 2015 — May 2016. Numerical Integration of Program Functions.
2. Matthew Sjodin, 4th-year CS Student, University of Oxford, June 2015 — May 2016. A Gradient-Based Method for Optimising the Output of Nondifferentiable Programs. **Co-winner of the best CS project award**.
3. Robert Brignull, 4th-year Math and CS Student, University of Oxford, June 2014 — May 2015. Compilation and optimisation of a high-order probabilistic programming language.
4. Kay Douglass, 4th-year CS Student, University of Oxford, June 2014 — May 2015. Automatic improvisation of music. **Co-winner of the best CS project award**.
5. Robert Collins, 3rd-year CS Student, University of Oxford, June 2013 — May 2014. Program analysis for inferring convexity and concavity properties.
6. Patrick Garvey, 3rd-year CS Student, University of Oxford, June 2012 — May 2013. Weakly consistent key-value stores.

Developmental Activities for Teaching

1. Fellow of the Higher Education Academy (HEA), UK.
2. Completed PGCAP (Postgraduate Certificate in Academic Practice) from Queen Mary University of London in March 2010.
3. Attended HR001 Fair Selection and Interview Skills from Queey Mary University of London.
4. Attended the 3rd International Blended Learning Conference in University of Hertfordshire on 19 June 2008.

Research Visits

1. IMDEA Software Institute, Madrid, Spain, February 4 — March 4, 2017. Host: Alexey Gotsman.
2. IMDEA Software Institute, Madrid, Spain, September 8 — September 19, 2014. Host: Alexey Gotsman.
3. IMDEA Software Institute, Madrid, Spain, September 30 — October 5, 2013. Host: Alexey Gotsman.
4. IMDEA Software Institute, Madrid, Spain, July 15 — July 20, 2012. Host: Alexey Gotsman.
5. Technion, Haifa, Israel, March 25 — March 30, 2012. Host: Eran Yahav.
6. Georgia Institute of Technology, USA, March 10 — March 17, 2012. Host: Mayur Naik.
7. Microsoft Research Redmond, USA, December 13 — December 14, 2010. Host: Shaz Qadeer.
8. Intel Labs Berkeley, USA, November 28 — December 12, 2010. Host: Mayur Naik.
9. IT University of Copenhagen, Denmark, October 25 — November 1, 2008. Host: Lars Birkedal.
10. Tel-Aviv University, Israel, February 11 — February 18, 2008. Host: Mooly Sagiv.
11. IT University of Copenhagen, Denmark, August 25 — September 8, 2007. Host: Lars Birkedal.
12. IT University of Copenhagen, Denmark, August 3 — August 25, 2006. Host: Lars Birkedal.
13. Imperial College, UK, March 5 — July 31, 2006. Host: Cristiano Calcagno.
14. Queen Mary University of London, UK, March 5 — July 31, 2006. Host: Peter W. O'Hearn.
15. Queen Mary University of London, UK, November 6 — 28, 2004. Host: Peter W. O'Hearn.
16. IT University of Copenhagen, Denmark, October 25 — November 5, 2004. Host: Lars Birkedal.
17. IT University of Copenhagen, Denmark, April 19 — 30, 2004. Host: Lars Birkedal.
18. Queen Mary University of London, UK, October 20 — November 11, 2003. Host: Peter W. O'Hearn.
19. IT University of Copenhagen, Denmark, September 21 — September 25, 2009. Host: Lars Birkedal.
20. IT University of Copenhagen, Denmark, October 25 — November 1, 2008. Host: Lars Birkedal.
21. Tel-Aviv University, Israel, February 11 — February 18, 2008. Host: Mooly Sagiv.
22. IT University of Copenhagen, Denmark, August 25 — September 8, 2007. Host: Lars Birkedal.
23. IT University of Copenhagen, Denmark, August 3 — August 25, 2006. Host: Lars Birkedal.
24. Imperial College, UK, March 5 — July 31, 2006. Host: Cristiano Calcagno.

25. Queen Mary University of London, UK, March 5 — July 31, 2006. Host: Peter W. O'Hearn.
26. Queen Mary University of London, UK, November 6 — 28, 2004. Host: Peter W. O'Hearn.
27. IT University of Copenhagen, Denmark, October 25 — November 5, 2004. Host: Lars Birkedal.
28. IT University of Copenhagen, Denmark, April 19 — 30, 2004. Host: Lars Birkedal.
29. Queen Mary University of London, UK, October 20 — November 11, 2003. Host: Peter W. O'Hearn.
30. Queen Mary University of London, UK, July — August, 2002. Host: Peter W. O'Hearn.
31. University of Birmingham, UK, February 2000 — July 2001. Host: Uday S. Reddy.
32. Queen Mary University of London, UK, July — August, 1999. Host: Peter W. O'Hearn.
33. Universidade Federal de Pernambuco, Brazil, July – August, 1998. Host: Paolo Borba.

Hosting Research Visitors

1. Andrea Cerone, IMDEA Software Institute, Spain, August 24 — August 26, 2016.
2. Noam Rinetzky, Tel-Aviv University, Israel, August 8 — August 12, 2016.
3. Alexey Gotsman, IMDEA Software Institute, Spain, August 1 — August 31, 2016.
4. Ohad Kammar, University of Cambridge, UK, August 6 — August 8, 2015.
5. Andrea Cerone, IMDEA Software Institute, Spain, March 26 — March 28, 2015.
6. Alexey Gotsman, IMDEA Software Institute, Spain, March 15 — April 8, 2015.
7. Derek Dreyer. Max-Planck Institute for Software Systems, Kaiserslautern-Saarbrucken, Germany, October 14 — October 16, 2014.
8. Noam Rinetzky, Tel Aviv University, Israel, August 12 — August 16, 2014.
9. Alexey Gotsman, IMDEA Software Institute, Spain, December 8 — December 10, 2013.
10. Andrea Cerone, IMDEA Software Institute, Spain, December 8 — December 10, 2013.
11. Alexey Gotsman, IMDEA Software Institute, Spain, September 1 — Semptember 6, 2013.
12. Manur Naik, Georgia Institute of Technology, USA, August 13 — August 16, 2013.
13. Xavier Rival, INRIA, France, May 29 — May 30, 2013.
14. Oukseh Lee, Hanyang University, Korea, July 18 — August 21, 2007.
15. John C. Reynolds, Carnegie Mellon University, USA, January 8 — 14, 2006.
16. Lars Birkedal, the IT University of Copenhagen, Denmark, November 8 — 15, 2005.
17. Dan Ghica, University of Birmingham, UK, October 2 — 15, 2005.
18. Dino Distefano, Queen Mary University of London, UK, March 6 – 28, 2005.
19. Peter W. O'Hearn, Queen Mary University of London, UK, February 22 — March 29, 2005.
20. Peter W. O'Hearn, Queen Mary University of London, UK, May 25 — June 28, 2004.
21. Cristiano Calcagno, Imperial College, UK, May 11 – 30, 2004.
22. Uday S. Reddy, University of Birmingham, UK, October, 2003.