

July 2008

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School of Computing
National University of Singapore
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EDUCATION

B.Sc. National University of Singapore, Singapore, 1983
Computer Science

M.Sc. National University of Singapore, Singapore, 1989
Computer Science

Ph.D. Yale University, Connecticut, USA, 1992
Computer Science

ACADEMIC EXPERIENCE

Associate Professor, Department of Computer Science, National University of Singapore, 2001 – Present.

Senior Lecturer, Department of Information Systems and Computer Science, National University of Singapore, 1997 – 2000.

Lecturer, Department of Information Systems and Computer Science, National University of Singapore, 1992 – 1997.

Senior Tutor, Department of Information Systems and Computer Science, National University of Singapore, 1985 – 1992.

RELEVANT EXPERIENCE

System Engineer, IBM Singapore, 1983 – 1985

COURSES TAUGHT

Undergraduate:

Software Engineering Project
Programming Language Concepts
Advanced Programming Systems
Data Structures and Algorithms
Artificial Intelligence

Graduate:

Principles of Program Analysis
Semantics of Programming Languages

AREAS OF RESEARCH

Program Analysis, Program Transformation, Functional Programming,
Domain-Specific Languages, Aspect-oriented Programming,
Specification Mining

RECENT RESEARCH GRANTS

“Software Dependability through Specification Mining.” Funded by the Defence Science and Technology Agency, May 2007 through Apr 2010. Total awarded: S\$347,000

“Principles and Practice of Aspect-Oriented Functional Languages.” Funded by National University of Singapore, Jan 2006 through Jan 2008. Total awarded: S\$61,000.

“A Language-based Approach to Financial Analysis.” Funded by National University of Singapore. Dec 2002 – Nov 2006. Total awarded: S\$310,000.

“Compiling an Embedded Language to Silicon.” Funded by National University of Singapore. Apr 2001 – Mar 2004. Total awarded: S\$179,000. Co-Investigator.

“Advanced Modelling and Methods for Domain-Specific Applications.” Funded by National University of Singapore. Jan 1999 – Jan 2002. Total awarded: S\$45,000. Co-Investigator.

“Performance Considerations for Reactive Systems.” Funded by National University of Singapore. Oct 1999 – Sep 2001. Total awarded: S\$16,000.

“Practical Tupling.” Funded by National University of Singapore. May 1998 – May 2000. Total awarded: \$8,800.

RESEARCH SUPERVISION

M.Sc. (graduated):

Lu Weiguo, Lee Tat Wee, Goh Aik Hui, Shi Kun, Saswat Anand, Xu Na.

Ph.D. (Graduated)

Hugh Anderson

Ph.D. (In process)

Zhu Ping, David Lo, Luca Beatrice

PROFESSIONAL AFFILIATIONS

Association for Computing Machinery (ACM)

- ACM SIG on Programming Languages and Systems

PROFESSIONAL SERVICE

Member, Program Committee, The Sixth ASIAN Symposium on Programming Languages and Systems (APLAS 2008). Dec 9 – 11, 2008, Bangalore, India.

Member, Editorial Board, International Journal of Data Analysis Techniques and Strategies (IJDATS).

Member, Program Committee, ACM SIGPLAN 2008 Workshop on Partial Evaluation and Program Manipulation (PEPM '08). Jan 7-8, 2008. San Francisco, USA.

Member, Program Committee, Sixth International Conference on Generative Programming and Component Engineering (GPCE'07). Oct 1-3, 2007. Salzburg, Austria.

Member, Program Committee, AOAsia III, International Workshop on Aspect-Orientation, Jul 23, 2007, Beijing, China.

Member, Program Committee, Third Asian Symposium on Programming Languages and Systems (APLAS'05). Nov 3-5, 2005. Tsukuba, Japan.

Member, Program Committee, ACM SIGPLAN 2004 Symposium on Partial Evaluation and Semantics-based Program Manipulation (PEPM'04). Aug 24-25, 2004. Verona, Italy.

Member, Program Committee, ACM SIGPLAN/SIGSOFT Conference on Generative Programming and Component Engineering (GPCE'02). Oct 6-8, 2002. Pittsburgh, USA.

Member, Program Committee, 2002 ACM SIGPLAN Workshop on Partial Evaluation and Semantics-based Program Manipulation (PEPM'02). Jan 14-15, 2002. Oregon, USA.

General Co-Chair, First Asian Workshop on Programming Languages and Systems. 2000. Singapore.

Co-chair, Workshop on Theory and Practices on Programming Languages, 1998. Singapore.

Co-chair. 1991 Post-PEPM Workshop, Connecticut, USA, 1991.

REVIEW EXPERIENCE

Ad Hoc Journal Reviews

ACM Transaction on Programming Languages and Systems; Transaction on Software Engineering; Higher-Order and Symbolic Computation; Applicable Algebra in Engineering, Communication and Computing; New Generation Computing; Journal of Logic Programming.

Ad Hoc Conference Paper Reviews

Logic based Program Synthesis and Transformation, 2005; Typed Lambda Calculi and Applications, 2005; Practical Aspects of Declarative Languages, 2005; Mathematical Foundations of Computer Science, 2005; Conference on Formal Engineering Methods,

2003; Principles of Programming Languages, 2003; Workshop on Verification, Model Checking, and Abstract Interpretation, 2002; Haskell Workshop, 2002; Asia-Pacific Software Engineering Conference, 1999, 2000; International Conference on Fundamentals of Computation, 1999; ASIAN, 1999; Symposium on Logic Programming, 1998.

Book Reviews for the Following Publishers

World Scientific Publishing.

UNIVERSITY SERVICE

Member, Search Committee for Head of Department of Information System, Aug 2007 – Present

Vice Dean, Undergraduate Studies, School of Computing, Aug 2005 – Present.

Member, Advisory Committee, School of Digital Media & Info-Communications Technology, Singapore Polytechnics, 2006 – Present.

Member, University Committee on Education Policy, 2004 – 2005.

Chairman, Curriculum Committee, Department of Computer Science, 2000 – 2005.

Member, Curriculum Committee, School of Computing, 1998 – 1999.

Vice President, Alumni Association of School of Computing, 1998 – 2001.

Chairman, Strategic Planning Committee, Department of Information Systems and Computer Science, 1996 – 1997. I submitted a proposal to the University for the *formation of the School of Computing*; the proposal was approved, and the School of Computing was established in 1998.

External Examiner, NECM Diploma in IT at KOLEJ NEW ERA, Selangor, Malaysia, 2000 – 2002.

SCHOLARLY PRESENTATIONS

International Refereed Journals

Chin, W N, S C Khoo and NEIL Jones, "Redundant Call Elimination via Tupling". *FUNDAMENTA INFORMATICA*, 69, part. 1-2 (Special on Program Transformation: Theoretical Foundations and Basic Techniques, Part 2) (2006): 1-37. (Poland).

Khoo, S C and K. Shi, "Program Adaptation via Output-Constraint Specialization". *Higher-Order and Symbolic Computing*, 17, part. 1-2 (2003): 93-128. (Netherlands).

Chin, W N and S C Khoo, "Calculating Sized Types". *Higher-Order and Symbolic Computing*, 14, no. 2/3 (2001): 261-300. (Netherlands).

Chin, W N and S C Khoo, "Better consumers for program specialisations". *Journal of Functional and Logic Programming*, no. 4 (1996): 1-30. (United States).

Consel, C and S C Khoo, "On-line and off-line partial evaluation: Semantic specifications and correctness proofs". JOURNAL OF FUNCTIONAL PROGRAMMING, 5, no. 4 (1995):461-500. (United Kingdom).

Consel, C and S C Khoo, "Parameterized partial education". ACM TRANSACTIONS ON PROGRAMMING LANGUAGES AND SYSTEMS, 15, no. 3 (1993): 463-493. (United States).

Consel, C and S C Khoo, "Semantics-directed generation of a prolog compiler". SCIENCE OF COMPUTER PROGRAMMING, vol.21 (1993): 263-291. (Netherlands).

International Refereed Conferences

Lo, D, S-C. Khoo and J. Li. Mining and Ranking Generators of Sequential Patterns. To appear in proceedings of the 8th SIAM International Conference on Data Mining (SDM'08). Atlanta, Georgia. April 24-26, 2008.

Lo, D, S-C. Khoo and C. Liu. Efficient Mining of Recurrent Rules from a Sequence Database. To appear in proceedings of the 13rd International Conference on Database Systems for Advance Applications (DASFAA'08). New Delhi, India. March 19-21, 2008.

Zhu, P. and S-C. Khoo. Specialization for Applications Using Shared Libraries. ACM SIGPLAN 2008 Symposium on Partial Evaluation and Program Manipulation. San Francisco, USA. January 7-8, 2008.

Lo, D, S. Maoz and S-C. Khoo. Mining Modal Scenario-based Specifications from Execution Traces of Reactive Systems. In proceedings of the 22nd IEEE/SIGSOFT International Conference on Automated Software Engineering (ASE'07). Atlanta, Georgia. Nov 5-9, 2007.

Lo, D, S-C. Khoo and C.Liu. Mining Temporal Rules from Program Execution Traces. In proceedings of the 3rd International Workshop on Program Comprehension through Dynamic Analysis (PCODA'07). Vancouver, Canada. Oct 29, 2007.

Lo, D, S. Maoz and S-C. Khoo. Mining Modal Scenarios from Execution Traces. In Companion to the 22nd SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA'07). Montreal, Canada. Oct 21-25, 2007.

Lo, D and S-C. Khoo. Software Specification Discovery: A New Data Mining Approach. In proceedings of the NSF Symposium on Next Generation Data Mining and Cyber-Enabled Discovery for Innovation (NGDM'07). Baltimore, Maryland. Oct 10-12, 2007.

Anderson, N H and S C Khoo, "A Tool for Calculating Exponential Run-time Properties". 9th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (Timisoara, Romania), 2007.

Lo, D, S C Khoo and C Liu, "Efficient mining of iterative patterns for software specification discovery". 13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (2007). New York: ACM. (13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 12 - 15 Aug 2007, San Jose, California, United States)

Lo, D, S Maoz and S C Khoo, "Mining modal scenarios from execution traces". OOPSLA Companion 2007: 777-778.

Chen, K, S-C Weng, M Wang, S C Khoo and C-H Chen, "A Compilation Model for Aspect-Oriented Polymorphically Typed Functional Languages". Lecture Notes in Computer Science 4634 (2007). Heidelberg: Springer-Verlag. (Static Analysis, 14th International Symposium, 22 - 24 Aug 2007, Denmark Technology University, Kongens Lyngby, Denmark)

Zhu, P and S C Khoo, "Towards constructing reusable specialization components". ACM (2007). New York: ACM. (ACM SIGPLAN Workshop on Partial Evaluation and Semantics-based Program Manipulation,, 15 - 16 Jan 2007, Nice, France)

Lo, D and S C Khoo, "SMaRTIC: Towards Building an Accurate, Robust and Scalable Specification Miner". SIGSOFT FSE 2006 (2006). New York: ACM. (Twelfth ACM SIGSOFT Symposium on Foundations of Software Engineering (ACM SIGSOFT 2006 / FSE 14), 5 - 11 Nov 2006, Portland, Oregon, United States)

Lo, D and S C Khoo, "QUARK: Empirical Assessment of Automaton-based Specification Miners". WCRE 2006 (2006). California: IEEE Computer Society. (13th Working Conference on Reverse Engineering, 23 - 27 Oct 2006, Civic Center, Benevento, Italy)

Chin, W N, Florin CRACIUN, S C Khoo and C C POPEEA, "A Flow-Based Approach for Variant Parametric Types". ACM SIGPLAN Intl Conf on Object-Oriented Programming, Systems, Languages and Applications, ed. Willian Cook (2006). New York: ACM Press. (Plenary paper) (ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages and Applications, OOPSLA 2006, 22 - 26 Oct 2006, Portland, Oregon, United States)

Zhu, P and S C Khoo, "Profitability-Oriented Component Specialization". Eleventh International Workshop on Component-Oriented Programming (WCOP 2006), Interner Bericht 2006-11 (2006). Karlsruhe: Universitat Karlsruhe. (Eleventh International Workshop on Component-Oriented Programming (WCOP 2006), 3 Jul 2006, Cité des Congrès, Nantes, France)

Wang, M, K Chen and S C Khoo, "On The Pursuit of Static and Coherent Weaving". FOAL 2006 Proceedings Foundations of Aspect-Oriented Languages Workshop at AOSD 2006 (2006). Iowa: Iowa State University, TR #06-01. (Foundations of Aspect-Oriented Languages 2006 (FOAL 2006), 21 Mar 2006, University of Bonn, Bonn, Germany)

Wang, M, K Chen and S C Khoo, "Type-Directed Weaving of Aspects for Higher-order Functional Languages". ACM SIGPLAN 2006 Workshop on Partial Evaluation and Program Manipulation (PEPM '06) (2006). New York: ACM Press. (ACM SIGPLAN 2006 Workshop on Partial Evaluation and Program Manipulation (PEPM '06), 9 - 10 Jan 2006, Charleston, South Carolina, United States)

Luca, B, S Andrei, N H Anderson and S C Khoo, "Program Transformation by Solving Recurrences". ACM SIGPLAN 2006 Workshop on Partial Evaluation and Program Manipulation (PEPM '06) (2006). New York: ACM Press. (ACM SIGPLAN 2006

Workshop on Partial Evaluation and Program Manipulation (PEPM '06), 9 - 10 Jan 2006, Charleston, South Carolina, United States)

Anderson, N H, S C Khoo, S Andrei and B Luca, "Calculating Polynomial Runtime Properties". Lecture Notes in Computer Science Vol. 3780, ed. Yi, Kwangkeun (2005): 230-246. Berlin: Springer-Verlag. (Third Asian Symposium on Programming Languages and Systems, 3 - 5 Nov 2005, University of Tsukuba, Tsukuba, Japan)

Chin, W N, S C Khoo, S Qin, C Popeea and H H Nguyen, "Verifying safety policies with size properties and alias controls". International Conference on Software Engineering , ed. Gruia-Catalin Roman, William G. Griswold, Bashar Nuseibeh (2005): 186-195. New York: ACM. (International Conference on Software Engineering, 15 - 21 May 2005, St. Louis, Missouri, United States)

Xu, N, S C Khoo and Z Hu, "PType System: A Featherweight Parallelizability Detector". Lecture Notes in Computer Science Volume 3302 / 2004 , ed. Wei-Ngan Chin (2004): 197-212. Berlin: Springer Berlin / Heidelberg. (Second ASIAN Symposium on Programming Languages and Systems, 4 - 6 Nov 2004, Academica Sinica, Taipei, Taiwan)

Leow, W K, S C Khoo, T H Loh and V Suhendra, "Heuristic Search with Reachability Tests for Automated Generation of Test Programs". Proc. IEEE Int. Conf. on Automated Software Engineering (2004): 282-285 (IEEE Int. Conf. on Automated Software Engineering, 20 - 25 Sep 2004, Linz, Austria)

Leow, W K, S C Khoo and YI Sun, "Automated Generation of Test Programs from Closed Specifications of Classes and Test Cases". International Conference on Software Engineering (2004): 96-105. Edinburgh, Scotland. (26th International Conference on Software Engineering, 23 - 28 May 2004, Scotland, United Kingdom)

Anderson, N H and S C Khoo, "Affine-based Size-Change Termination". First Asian Symposium on Programming Languages and Systems, ed. Atsushi Ohori. Lecture Notes in Computer Science, vol. 2895 (2003): 122-144. Springer. (First Asian Symposium on Programming Languages and Systems, 27 - 29 Nov 2003, Beijing, China)

Chin, W N, S C Khoo and N Xu, "Extending Sized Type with Collection Analysis". 2003 ACM SIGPLAN Workshop on Partial Evaluation and Semantics Based Program Manipulation (PEPM'03) (2003): 75-84. ACM Press. (Partial Evaluation and Semantics Based Program Manipulation (PEPM'03), 7 Jun 2003, San Diego, California, United States)

Xu, N and S C Khoo, "Compiling Real Time Functional Reactive Programming". ACM SIGPLAN ASIA-PEPM 2002 (2002): 83-93. ACM Press. (ACM SIGPLAN Asian Symposium on Partial Evaluation and Semantics-Based Program Manipulation, 12 - 14 Sep 2002, Aizu, Japan)

Khoo, S C and K Shi, "Output Constraint Specialization". ACM SIGPLAN ASIA-PEPM 2002 (2002): 106-116. ACM Press. (ACM SIGPLAN ASIA Symposium on Partial Evaluation and Semantics-Based Program Manipulation (ASIA-PEPM), 12 - 14 Sep 2002, Aizu, Japan)

Anand, S, W N Chin and S C Khoo, "A Lazy Divide & Conquer Approach to Constraint Solving". IEEE International Conference on Tools with Artificial Intelligence (2002): 91-98 (IEEE International Conference on Tools with Artificial Intelligence, 4 - 6 Nov 2002, Washington D.C., United States)

Khoo, S C and W N Chin, "Charting Patterns on Price History". International Conference on Functional Programming (2001): 134 - 145 (International Conference on Functional Programming, 2 - 5 Sep 2001, Florence, Italy)

Chin, W N, S C Khoo and N DANA Xu, "Deriving Pre-Conditions for Array Bound Check Elimination". Second Symposium on Programs as Data Objects PADO II . Lecture Notes in Computer Science (LNCS), vol. Vol. 2053 (2001): 2-24 (Second Symposium on Programs as Data Objects PADO II, 21 May 2001, Arhus, Denmark)

Chin, W N, S C Khoo, ZHENJIANG Hu and MASATO Takeichi, "Deriving Parallel Codes via Invariants". Static Analysis Symposium, 2000 , ed. Jens Palsberg (2000): 75-94 (Static Analysis Symposium, 2000, 29 Jun 2000, Santa Barbara, California, United States)

Chin, W N and S C Khoo, "Calculating Sized Types". Proceedings of the 2000 ACM SIGPLAN Workshop on Partial Evaluation and Semantics-Based Program Manipulation (2000): 62-72. USA: ACM Press. (Proceedings of the 2000 ACM SIGPLAN Workshop on Partial Evaluation and Semantics-Based Program Manipulation, 22 Jan 2000, Boston, Massachusetts, United States)

Chin, W N, A H Goh and S C Khoo, "Effective Optimisation of Multiple Traversals in Lazy Language". 1999 ACM SIGPLAN Workshop on Partial Evaluation and Semantics-based Program Manipulation (1999): 119-130. New York: ACM Press. (1999 ACM SIGPLAN Workshop on Partial Evaluation and Semantics-based Program Manipulation, 22 Jan 1999, San Antonio, Texas, United States)

Chin, W N, S C Khoo and T W Lee, "Synchronisation analyses to stop tupling". European Symposium on Programming (1998): 75-89 (European Symposium on Programming, 2 - 4 Apr 1998, Portugal)

Tan, E, L H Lim and S C Khoo, "A conceptual framework on the evaluation of multimedia learning systems and a neural-network implementation". Proceedings of the 4th Conference of the International Society for Decision Support Systems (1997): 99-114 (Conference of the International Society for Decision Support Systems, 21 - 22 Jul 1997, Lausanne, Switzerland)

Chin, W N, S C Khoo and P Thiemann, "Synchronization analyses for multiple recursion parameters". Dagstuhl Seminar on Partial Evaluation, ed. O Danvy, R Glueck, P Thiemann, comp. Wilhem-Schickard-Institut (WSI-96-6) (1996): 33-53. Tebingen: University of Tuebingen. (Dagstuhl Seminar on Partial Evaluation, 12 - 16 Feb 1996, Germany)

Chin, W N and S C Khoo, "Better consumers for deforestation (Extend Abstract)". PLILP'95, ed. Manuel Hermenegildo and S Doaitse Swierstra. LNCS, vol. 982, ed. G.Goos, J. Hartmanis, J. Van Leeuwen (1995): 223-241. Springer. (7th International Symposium, PLILP'95, 20 - 22 Sep 1995)

Chin, W N and S C Khoo, "Tupling functions with multiple recursion parameters". Third International Workshop on Static Analysis, ed. P Cousot, M Falaschi, G File and A Rauzy. Lecture Notes in Computer Science, vol. No. 724, ed. G. Goos, J. Hartmanis (1993): 124-140. Berlin: Springer-Verlag. (Third International Workshop on Static Analysis, 22 – 24 Sep 1993, Padova, Italy)

Consel, C and S C Khoo, "Semantics-directed generation of a prolog compiler". 3rd International Symposium, PLILP'91, ed. J Malnszynski and M Wirsing. Lecture Notes in Computer Science, vol. 528 (1991): 135-146. Germany: Springer-Verlag. (3rd International Symposium, PLILP'91, 26 - 28 Aug 1991, Passau, Germany)

Consel, C and S C Khoo, "Parameterized Partial Evaluation". ACM SIGPLAN'91 Conference on Programming Language Design and Implementation (1991): 92-106. United States: ACM Press. (ACM SIGPLAN'91 Conference on Programming Language Design and Implementation, 26 - 28 Jun 1991, Toronto, Ontario, Canada)

Khoo, S C and R S Sundaresh, "Compiling inheritance using partial evaluation". Proceedings of the Symposium on Partial Evaluation and Semantics-Based Program Manipulation, ed. P Hudak and N D Jones (1991): 211-222. United States: ACM Press. (Proceedings of the Symposium on Partial Evaluation and Semantics-Based Program Manipulation, 17 - 19 Jul 1991, Yale University, New Haven, Connecticut, United States)

Invited Talks

S C Khoo, "Specification Mining". Invited Lecture, IT University of Denmark, March 2008.

Chin, W N, S C Khoo and T.W. Lee, "Synchronization Analysis to Stop Tupling". Invited Lecture, 2001 (31 Jul 2003)

Chin, W N, S C Khoo and T W Lee, "Synchronization Analysis To Stop Tupling". CACA Seminar, March 2000 (31 Jul 2003, University of Tokyo, Tokyo, Japan)

Khoo, S C, W N Chin and D N Xu, "Calculating Sized Types". Second JSSST Workshop on Programming and Programming Languages (20 - 22 Mar 2000, Japan)

Chin, W N and S C Khoo, "Better Consumers for Program Transformation". IFIP WG2.8 (Functional Programming) Meeting (14 - 21 Jan 1995, Santa Cruz, California, United States)