

NSF BIOGRAPHICAL SKETCH

NAME: Shao, Zhong

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POSITION TITLE & INSTITUTION: Department Chair and Thomas L. Kempner Professor, Yale University

(a) PROFESSIONAL PREPARATION -(see PAPPG Chapter II.C.2.f.(a))

INSTITUTION	LOCATION	MAJOR / AREA OF STUDY	DEGREE (if applicable)	YEAR YYYY
University of Science and Technology of China	Hefei, Anhui	Computer Science	BS	1988
Princeton University	Princeton, New Jersey	Computer Science	MS	1991
Princeton University	Princeton, New Jersey	Computer Science	PHD	1994

(b) APPOINTMENTS -(see PAPPG Chapter II.C.2.f.(b))

2017 - present Department Chair and Thomas L. Kempner Professor, Yale University, Department of Computer Science, New Haven, CT

2003 - present Professor, Yale University, Department of Computer Science, New Haven, CT

2000 - 2003 Associate Professor, Yale University, Department of Computer Science, New Haven, CT

1994 - 2000 Assistant Professor, Yale University, Department of Computer Science, New Haven, CT

(c) PRODUCTS -(see PAPPG Chapter II.C.2.f.(c))

Products Most Closely Related to the Proposed Project

1. Koenig J, Shao Z. Refinement-Based Game Semantics for Certified Abstraction Layers. Proceedings of the 35th Annual ACM/IEEE Symposium on Logic in Computer Science. LICS '20: 35th Annual ACM/IEEE Symposium on Logic in Computer Science; 08 0 20; Saarbrücken Germany. New York, NY, USA: ACM; c2020. Available from: <https://dl.acm.org/doi/10.1145/3373718.3394799> DOI: 10.1145/3373718.3394799
2. Koenig J, Shao Z. CompCertO: compiling certified open C components. Proceedings of the 42nd ACM SIGPLAN International Conference on Programming Language Design and Implementation. PLDI '21: 42nd ACM SIGPLAN International Conference on Programming Language Design and Implementation; 20 0 21; Virtual Canada. New York, NY, USA: ACM; c2021. Available from: <https://dl.acm.org/doi/10.1145/3453483.3454097> DOI: 10.1145/3453483.3454097
3. Wang Y, Wilke P, Shao Z. An abstract stack based approach to verified compositional compilation to machine code. Proceedings of the ACM on Programming Languages. 2019 January 02; 3(POPL):1-30. Available from: <https://dl.acm.org/doi/10.1145/3290375> DOI: 10.1145/3290375
4. Wang Y, Xu X, Wilke P, Shao Z. CompCertELF: verified separate compilation of C programs into ELF object files. Proceedings of the ACM on Programming Languages. 2020 November 13;

4(OOPSLA):1-28. Available from: <https://dl.acm.org/doi/10.1145/3428265> DOI: 10.1145/3428265

5. Wang Y, Zhang L, Shao Z, Koenig J. Verified compilation of C programs with a nominal memory model. Proceedings of the ACM on Programming Languages. 2022 January 16; 6(POPL):1-31. Available from: <https://dl.acm.org/doi/10.1145/3498686> DOI: 10.1145/3498686

Other Significant Products, Whether or Not Related to the Proposed Project

1. Costanzo D, Shao Z, Gu R. End-to-end verification of information-flow security for C and assembly programs. Proceedings of the 37th ACM SIGPLAN Conference on Programming Language Design and Implementation. PLDI '16: ACM SIGPLAN Conference on Programming Language Design and Implementation; 13 0 16; Santa Barbara CA USA. New York, NY, USA: ACM; c2016. Available from: <https://dl.acm.org/doi/10.1145/2908080.2908100> DOI: 10.1145/2908080.2908100
2. Gu R, Koenig J, Ramananandro T, Shao Z, Wu X, Weng S, Zhang H, Guo Y. Deep Specifications and Certified Abstraction Layers. Proceedings of the 42nd Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages. POPL '15: The 42nd Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages; 15 0 15; Mumbai India. New York, NY, USA: ACM; c2015. Available from: <https://dl.acm.org/doi/10.1145/2676726.2676975> DOI: 10.1145/2676726.2676975
3. Oliveira Vale A, Melliès P, Shao Z, Koenig J, Stefanescu L. Layered and object-based game semantics. Proceedings of the ACM on Programming Languages. 2022 January 16; 6(POPL):1-32. Available from: <https://dl.acm.org/doi/10.1145/3498703> DOI: 10.1145/3498703
4. Ronghui Gu, Zhong Shao, Hao Chen, Xiongnan (Newman) Wu, Jieung Kim, Vilhelm Sjöberg, David Costanzo. CertiKOS: An Extensible Architecture for Building Certified Concurrent OS Kernels. In: Kimberly Keeton, Timothy Roscoe, editors. 12th USENIX Symposium on Operating Systems Design and Implementation, OSDI 2016, Savannah, GA, USA, November 2-4, 2016; 2016; USENIX Association; c2016. Available from: <https://www.usenix.org/conference/osdi16/technical-sessions/presentation/gu> uri: <https://www.usenix.org/conference/osdi16/technical-sessions/presentation/gu>
5. Sjöberg V, Sang Y, Weng S, Shao Z. DeepSEA: a language for certified system software. Proceedings of the ACM on Programming Languages. 2019 October 10; 3(OOPSLA):1-27. Available from: <https://dl.acm.org/doi/10.1145/3360562> DOI: 10.1145/3360562

(d) SYNERGISTIC ACTIVITIES -(see PAPPG Chapter II.C.2.f.(d))

1. Co-Founder of the new blockchain security startup CertiK Global Ltd which applies the formal verification technologies developed at Yale to the field of smart contracts and blockchains.
2. Co-PI of the NSF Expedition in Computing Grant on the Science of Deep Specification from 2015-2021, which focuses on the specification and verification of full functional correctness of software and hardware. The DeepSpec project has hosted multiple outreach summer schools and workshops on the education and knowledge transfer of the DeepSpec technologies.
3. Architect and Developer of the CertiKOS Certified OS Kernel which is now used as an instructional OS kernel for the Operating Systems class at Yale. The same certified kernel was also used by the Ground Team in the DARPA HACMS program.

4. Invited speaker and participant for the Isaac Newton Institute Program on Verified Software, Cambridge, UK. July - August 2022.
5. Member of Program Committees for top-tier programming language conferences such as OOPSLA'22, POPL'21, LICS'18, POPL'18, and PLDI'17.