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 Unviersity	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. 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. 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

4. 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
5. 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

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

1. Gu R, Shao Z, Kim J, Wu X, Koenig J, Sjöberg V, Chen H, Costanzo D, Ramananandro T. Certified concurrent abstraction layers. Proceedings of the 39th ACM SIGPLAN Conference on Programming Language Design and Implementation. PLDI '18: ACM SIGPLAN Conference on Programming Language Design and Implementation; 18 0 18; Philadelphia PA USA. New York, NY, USA: ACM; c2018. Available from: https://dl.acm.org/doi/10.1145/3192366.3192381 DOI: 10.1145/3192366.3192381
2. Gu R, Shao Z, Chen H, Kim J, Koenig J, Wu X, Sjöberg V, Costanzo D. Building certified concurrent OS kernels. Communications of the ACM. 2019 September 24; 62(10):89-99. Available from: https://dl.acm.org/doi/10.1145/3356903 DOI: 10.1145/3356903
3. 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
4. Liu M, Rieg L, Shao Z, Gu R, Costanzo D, Kim J, Yoon M. Virtual timeline: a formal abstraction for verifying preemptive schedulers with temporal isolation. Proceedings of the ACM on Programming Languages. 2020 January; 4(POPL):1-31. Available from: https://dl.acm.org/doi/10.1145/3371088 DOI: 10.1145/3371088
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. Member of Program Committee for various conferences and workshops including OOPSLA'22, POPL'21, ESOP'21, ESOP'19, LICS'18, POPL'18, PLDI'17, CSF'17.
2. General Chair for POPL'09 and TLDI'03. Program Chairs for APLAS'07, LOLA'11, CPP'11, ESOP'14, IHP'14. Member of the Steering Committee for POPL (2008-2011), ICFP (2004-2006), TLDI, and APLAS.
3. Architect and Developer of the mCertiKOS 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 use dby the Ground Team in the DARPA HACMS program; it was integrated with a user-level network stack library (developed by the Kestrel Institute), a set of robotic control

software (done by SRI, CMU, and Penn), and deployed both on the DARPA HACMS Landshark UGV and on the American Built-Car platform.

4. Co-Founder of the new blockchain security startup CertiK, LLC which applies the formal verification technologies developed at Yale to the field of smart contract and blockchains.
5. 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.