

# Xiaohong Chen

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CONTACT INFORMATION	Department of Computer Science University of Illinois at Urbana-Champaign 201 North Goodwin Avenue Urbana, Illinois 61801 USA	(217) 979-7615 <a href="mailto:xc3@illinois.edu">xc3@illinois.edu</a> <a href="http://fsl.cs.illinois.edu/~xchen">http://fsl.cs.illinois.edu/~xchen</a>
RESEARCH INTERESTS	Formal semantic frameworks for programming languages Logic and its applications Automated and interactive theorem proving Programming languages design and analysis	
EDUCATION	<b>Department of Computer Science, University of Illinois at Urbana-Champaign</b> Ph.D. Candidate in Computer Science <ul style="list-style-type: none"><li>• Dissertation Topic: A Practical Trustworthy Language Framework</li><li>• Advisor: Grigore Roşu</li></ul> <b>School of Mathematical Sciences, Peking University</b> Bachelor of Science, June 2014 <ul style="list-style-type: none"><li>• Highest distinction in general scholarship</li></ul>	
SELECTED AWARDS	2020–2021 2018–2019 2012–2013 2013	Mavis Future Faculty Fellow Yunni & Maxine Pao Memorial Fellowship China National Scholarship Meritorious Winner (First Prize) in the Mathematical Contest in Modeling held by the Consortium for Mathematics and Its Applications
PUBLICATIONS	Core publications are marked by ‘†’.  † X. Chen, et al. <i>Towards a unified proof framework for automated fixpoint reasoning using matching logic</i> , Conference on Object-Oriented Programming Systems, Languages, and Applications (OOPSLA), 2020. † X. Chen, G. Roşu. <i>A general approach to define binders using matching logic</i> , International Conference on Functional Programming (ICFP), 2020. † X. Chen, D. Lucanu, G. Roşu. <i>Matching logic explained</i> , Journal of Logical and Algebraic Methods in Programming (JLAMP), To Appear. X. Chen, D. Lucanu, G. Roşu. <i>Initial algebra semantics in matching logic</i> , Technical Report <a href="http://hdl.handle.net/2142/107781">http://hdl.handle.net/2142/107781</a> , 2020. † X. Chen, et al. <i>Semantics of <math>\mathbb{K}</math></i> , available at <a href="https://github.com/kframework/kore/blob/master/docs/semantics-of-k.pdf">https://github.com/kframework/kore/blob/master/docs/semantics-of-k.pdf</a> . It is the most comprehensive specification of the semantics of the $\mathbb{K}$ language framework ( <a href="http://kframework.org">http://kframework.org</a> ) and has been adopted as the reference document that guides the industrial development of $\mathbb{K}$ in the Runtime Verification Inc. X. Chen, G. Roşu. <i>SETSS’19 lecture notes on <math>\mathbb{K}</math></i> , Book Chapter of International School on Engineering Trustworthy Software Systems (SETSS), 2019. † X. Chen, G. Roşu. <i>Matching <math>\mu</math>-logic</i> , Logics in Computer Science (LICS), 2019. X. Chen, G. Roşu. <i>Applicative matching logic</i> , Technical Report <a href="http://hdl.handle.net/2142/104616">http://hdl.handle.net/2142/104616</a> , 2019	

	<p>X. Chen, G. Roşu. <i>A language-independent program verification framework</i>, Leveraging Applications of Formal Methods, Verification and Validation (ISoLA), 2018.</p> <p>X. Chen, D. Park, G. Roşu. <i>A language-independent approach to smart contract verification</i>, Leveraging Applications of Formal Methods, Verification and Validation (ISoLA), 2018.</p> <p>J. Wang, X. Chen, J. Sun, S. Qin. <i>Improving probability estimation through active probabilistic model learning</i>, International Conference on Formal Engineering Methods (ICFEM), 2017</p> <p>E. Palomar, X. Chen, Z. Liu, S. Maharjan, J. Bowen. <i>Component-based modelling for scalable smart city systems interoperability: A case study on integrating energy demand response systems</i>, Sensors <b>16</b>(11):1810, 2016.</p> <p>P. Kong, Y. Li, X. Chen, J. Sun, M. Sun, J. Wang. <i>Towards concolic testing for hybrid systems</i> Formal Methods (FM), 2016.</p> <p>(Best Paper) S. Li, X. Chen, Y. Wang, M. Sun. <i>A framework for off-line conformance testing of timed connectors</i>, Theoretical Aspects of Software Engineering (TASE), 2015.</p> <p>Z. Liu, X. Chen. <i>Model-driven design of object and component systems</i>, Book Chapter of The First International School on Engineering Trustworthy Software Systems (SETSS), 2014.</p> <p>X. Chen, J. Sun, M. Sun. <i>A hybrid model of connectors in cyber-physical systems</i>, International Conference on Formal Engineering Methods (ICFEM), 2014.</p>										
CONFERENCE TALKS	<p><i>A general approach to define binders using matching logic</i> at the 25<sup>th</sup> ACM SIGPLAN International Conference on Functional Programming, held online, (August 2020).</p> <p><i>A language-independent program verification framework</i> at the 7<sup>th</sup> International Symposium on Leveraging Applications of Formal Methods, Verification and Validation, Limassol, Cyprus, (November 2018).</p> <p><i>A language-independent approach to smart contract verification</i> at the 7<sup>th</sup> International Symposium on Leveraging Applications of Formal Methods, Verification and Validation, Limassol, Cyprus, (November 2018).</p> <p><i>Towards concolic testing for hybrid systems</i> at the 21<sup>st</sup> International Symposium on Formal Methods, Limassol, Cyprus, (November 2016).</p>										
TUTORIALS	<p><i>Using the K Framework to Formalize Functional Languages</i> at the 25<sup>th</sup> ACM SIGPLAN International Conference on Functional Programming, (August 2020).</p>										
PRACTICAL TOOLS	<p>Matching logic prover, GitHub project: <a href="https://github.com/kframework/matching-logic-prover/tree/master/prover">https://github.com/kframework/matching-logic-prover/tree/master/prover</a>.</p> <p>Matching logic proof checker, GitHub project: <a href="https://github.com/kframework/matching-logic-prover/tree/master/checker">https://github.com/kframework/matching-logic-prover/tree/master/checker</a>.</p>										
TEACHING EXPERIENCE	<table> <tr> <td>Fall 2020</td><td>Teaching Assistant, Software Engineering I</td></tr> <tr> <td>Fall 2019</td><td>Teaching Assistant, Software Engineering I</td></tr> <tr> <td>Fall 2018</td><td>Guest Lecturer, Programming Languages Semantics</td></tr> <tr> <td>Spring 2015</td><td>Assistant Lecturer, Data Analysis</td></tr> <tr> <td>Fall 2014</td><td>Assistant Lecturer, Software Engineering</td></tr> </table>	Fall 2020	Teaching Assistant, Software Engineering I	Fall 2019	Teaching Assistant, Software Engineering I	Fall 2018	Guest Lecturer, Programming Languages Semantics	Spring 2015	Assistant Lecturer, Data Analysis	Fall 2014	Assistant Lecturer, Software Engineering
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RESEARCH  
EXPERIENCE

- 2018–2019      Verification Engineer, Runtime Verification Inc.  
Designed the logical foundations of the Haskell backend of the  $\mathbb{K}$  language framework (<http://github.com/kframework>). Wrote the reference document *Semantics of  $\mathbb{K}$*  (~70 pages), which guides the industrial development of the  $\mathbb{K}$  framework. Participated in designing the symbolic execution and formal analysis engines.
- 2015–2016      Research Assistant, Singapore University of Technology and Design.  
Created probabilistic models for cyber-physical systems, designed efficient and effective sampling algorithms, and proved asymptotic properties of the algorithms.

SERVICE

- 2020      Journal reviewer of JLAMP.
- 2019      Conference reviewer of LICS, CAV, CONCUR, FM, FoSSaCS.
- 2019      Journal reviewer of JLAMP.
- 2018      Conference reviewer of PLDI, FSCD, AiML.
- 2017      Conference reviewer of FSCD, RV, CALCO, HSCC, NFM.
- 2016      Conference reviewer of FM, SEFM, TASE.
- 2015      Conference reviewer of APSEC, MEDI, WWV.