

Joonwon Choi

Senior Applied Scientist at Amazon Web Services (AWS)

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Education

Massachusetts Institute of Technology Doctor of Philosophy in Electrical Engineering and Computer Science - Graduate Cumulative GPA: 5.0 (on a 5.0 scale)	09/01/2016 – 02/17/2021
Massachusetts Institute of Technology Master of Science in Electrical Engineering and Computer Science - Graduate Cumulative GPA: 5.0 (on a 5.0 scale)	09/01/2014 – 06/03/2016
Seoul National University Bachelor of Science in Computer Science and Engineering Double major in Mathematical Sciences - Graduated with honors (<i>summa cum laude</i>)	03/01/2006 – 02/26/2013

Selected Publications

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- [1] **Revamping Verilog Semantics for Foundational Verification.**
Joonwon Choi, Jaewoo Kim, Jeehoon Kang.
OOPSLA'25 (*Proceedings of the ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications*).
Distinguished Paper Award (6 papers selected out of 210).
 - [2] **Hemiola: A DSL and Verification Tools to Guide Design and Proof of Hierarchical Cache-Coherence Protocols.**
Joonwon Choi, Adam Chlipala, Arvind.
CAV'22 (*regular paper, Proceedings of the International Conference on Computer-Aided Verification*).
 - [3] **Structural Design and Proof of Hierarchical Cache-Coherence Protocols.**
Joonwon Choi
PhD Thesis in Electrical Engineering and Computer Science, Massachusetts Institute of Technology.
 - [4] **Integration Verification Across Software and Hardware for a Simple Embedded System.**
Andres Erbsen, Samuel Gruetter, *Joonwon Choi*, Clark Wood, Adam Chlipala.
PLDI'21 (*Proceedings of the ACM SIGPLAN Conference on Programming Language Design and Implementation*).
 - [5] **EverCrypt: A Fast, Verified, Cross-Platform Cryptographic Provider.**
Jonathan Protzenko, Bryan Parno, Aymeric Fromherz, Chris Hawblitzel, Marina Polubelova, Karthikeyan Bhargavan, Benjamin Beurdouche, *Joonwon Choi*, Antoine Delignat-Lavaud, Cédric Fournet, Natalia Kulatova, Tahina Ramananandro, Aseem Rastogi, Nikhil Swamy, Christoph M. Wintersteiger, and Santiago Zanella-Beguelin.
SP'20 (*IEEE Symposium on Security and Privacy*).
 - [6] **Crellvm: Verified Credible Compilation for LLVM.**
Jeehoon Kang, Yoonseung Kim, Youngju Song, Juneyoung Lee, Sanghoon Park, Mark Dongyeon Shin, Yonghyun Kim, Sungkeun Cho, *Joonwon Choi*, Chung-Kil Hur, and Kwangkeun Yi.
PLDI'18 (*Proceedings of the ACM SIGPLAN Conference on Programming Language Design and Implementation*).
 - [7] **Kami: A Platform for High-Level Parametric Hardware Specification and its Modular Verification.**
Joonwon Choi, Muralidaran Vijayaraghavan, Benjamin Sherman, Adam Chlipala, Arvind.
ICFP'17 (*Proceedings of the ACM SIGPLAN International Conference on Functional Programming*).

Working Experience

Amazon Web Services (AWS), United States <i>Senior Applied Scientist</i>	04/21/2025 – Current <i>Apr 2025 – Current</i>
Apple, United States <i>Formal Verification Tech Lead</i> <i>Senior Formal Verification Engineer</i> <i>Formal Verification Engineer</i>	03/15/2021 – 04/16/2025 <i>Oct 2024 – Apr 2025</i> <i>Oct 2023 – Sep 2024</i> <i>Mar 2021 – Sep 2023</i>
Microsoft Research Cambridge, United Kingdom <i>Research Intern</i>	07/02/2018 – 09/21/2018
allm Games, Korea <i>Software Engineer (Skilled Industry Personnel as alternative military service)</i>	04/13/2009 – 09/12/2011
Google, Korea <i>SWE Intern</i>	01/05/2009 – 04/03/2009

Teaching Experience

MIT 6.887: Formal Reasoning About Programs <i>Teaching Assistant</i>	Spring 2017
SNU 4190.310: Programming Languages <i>Teaching Assistant</i>	Fall 2013

Academic Services

Program Committee: VSTTE 2024, PLDI 2024, CAV 2020 AE

Honors & Awards

Kwanjeong Educational Fellowship	Sep 2014 – May 2019
MIT Emerson Scholarship for Private Music Study	Sep 2014 – May 2018
Top Honor (<i>summa cum laude</i>) Certification <i>Seoul National University</i>	Feb 2013
Presidential Science Scholarship	Mar 2006 – Feb 2013

Last updated: October 19, 2025