Joonwon Choi

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Research Interests

- Formal verification for correct hardware design and synthesis. Take a look at the Kami project page for details.

- A language for coherent systems, for easy design and automated proof.

- Formal specification of RISC-V and verification of processors.

Current Position

PhD Candidate, MIT CSAIL	Sep 2014 – Present
Advisors: Adam Chlipala and Arvind	

Education

MIT CSAIL	Sep 2014 – Jun 2016
Master of Science in Electrical Engineering and Computer Science	
Seoul National University	Mar 2006 – Feb 2013
Bachelor of Science in Computer Science and Engineering	
Double major in Mathematical Sciences	
graduated with honors (summa cum laude)	

Publications

[1] An Inlining Approach to Formal Hardware Semantics. M.S. Thesis in Electrical Engineering and Computer Science. Massachusetts Institute of Technology. [pdf]
Thesis Supervisor: Arvind

Current Research Projects

Kami: A Coq framework to support implementing and verifying hardware components

- Kami is a Coq framework to support implementing, specifying, verifying, and compiling Bluespec-style hardware components. The core of the approach is modular proofs of hardware components. We aim for specifications and proofs that mirror the modular decomposition of a large hardware system into simpler parts. We also intend to support techniques for machine-checked correctness proofs of key synthesis algorithms that translate high-level hardware designs into low-level circuit descriptions.

Honors & Awards

Kwanjeong Educational Fellowship	Sep 2014 – Current
MIT Emerson Scholarship for Private Music Study	Sep 2014 – Current

Top Honor (summa cum laude) Certification   Feb 2013
Seoul National University

Working Experience

Microsoft Research Cambridge, United Kingdom   Mar 2013 – Apr 2013
Visiting Researcher

Google, Korea   Jan 2009 – Apr 2009
Software Engineering Intern(SWE Intern)