Wonyeol Lee

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Education

- **Stanford University**, USA — 09/2014 –
  Ph.D. Candidate in Computer Science
  Advisor: Alex Aiken
  Currently on leave for alternative military service (09/2017 – 08/2020)
- **Pohang University of Science and Technology (POSTECH)**, Korea — 03/2010 – 02/2014
  B.S. in Computer Science
  B.S. in Mathematics
  Valedictorian (GPA: 4.26/4.30, highest ever at POSTECH)

Research Interests

- Program Verification and Analysis
- Numerical Programs (using floating-point or fixed-point)
- Probabilistic Programs

Publications

Conference

1. Reparameterization Gradient for Non-differentiable Models
   Wonyeol Lee, Hangyeol Yu, and Hongseok Yang
   NeurIPS 2018: Conference on Neural Information Processing Systems
2. On Automatically Proving the Correctness of math.h Implementations
   Wonyeol Lee, Rahul Sharma, and Alex Aiken
   POPL 2018: ACM SIGPLAN Symposium on Principles of Programming Languages
3. Verifying Bit-Manipulations of Floating-Point
   Wonyeol Lee, Rahul Sharma, and Alex Aiken
   PLDI 2016: ACM SIGPLAN Conference on Programming Language Design and Implementation
4. A Proof System for Separation Logic with Magic Wand
   Wonyeol Lee and Sungwoo Park
   POPL 2014: ACM SIGPLAN Symposium on Principles of Programming Languages
5. CT-IC: Continuously activated and Time-restricted Independent Cascade Model for Viral Marketing
   Wonyeol Lee, Jinha Kim, and Hwanjo Yu
   ICDM 2012: IEEE International Conference on Data Mining
6. Edge Detection Using Morphological Amoebas in Noisy Images
   Wonyeol Lee, Seyun Kim, Youngwoo Kim, Jaeyoung Lim, and Dong Hoon Lim
   ICIP 2009: IEEE International Conference on Image Processing

Journal

7. CT-IC: Continuously activated and Time-restricted Independent Cascade model for Viral Marketing
   Jinha Kim, Wonyeol Lee, and Hwanjo Yu
   Knowledge-Based Systems, 62:57–68, 2014
8. Edge Detection Based on Morphological Amoebas
   Wonyeol Lee, Youngwoo Kim, Seyun Kim, Jaeyoung Lim, and Dong Hoon Lim
   The Imaging Science Journal, 60(3):172–183, 2012

Experience

Research

- **Research Scientist**, KAIST, Korea (Alternative Military Service) 09/2017 –
  Mentor: Hongseok Yang
  Currently working on probabilistic programming [1]
- **Research Intern**, Microsoft Research, India 06/2017 – 09/2017
  Mentor: Rahul Sharma
  - Designed a MATLAB-like language for machine learning applications
  - Implemented its compiler that generates a C-like program with no floating-point
- **Research Intern**, Microsoft Research Redmond, USA 06/2016 – 09/2016
  Mentor: Chris Hawblitzel
  Analyzed floating-point computations in drone software
- **Research Assistant**, Stanford University, USA 01/2015 –
  Advisor: Alex Aiken
  Verified floating-point programs [2, 3]
- **Research Assistant**, Stanford University, USA 09/2014 – 12/2014
  Advisor: Christopher Re (First-year Rotation Program)
  Designed a domain-specific language for DeepDive
- **Research Assistant**, POSTECH, Korea 03/2013 – 05/2014
  Advisor: Sungwoo Park
  Designed a proof system for separation logic [4]
- **Research Intern**, POSTECH, Korea 03/2011 – 02/2013
  Advisor: Hwanjo Yu (Undergraduate Research Program)
  Worked on a influence maximization problem for a new diffusion model [5, 7]
- **Research Intern**, Gyeongsang National University, Korea 03/2007 – 02/2009
  Advisor: Dong Hoon Lim (High School Research Program)
  Worked on image processing using mathematical morphology [6, 8]

Others

- **Oregon Programming Languages Summer School**, University of Oregon, USA 07/2013
- **International Summer Science Institute**, Weizmann Institute of Science, Israel 07/2009

Honors & Awards

Scholarship

- **Samsung Scholarship**, Samsung Scholarship Foundation 09/2014 –
  For graduate study abroad ($250,000)
- **KFAS Graduate Scholarship**, Korea Foundation for Advanced Studies 08/2013
  For graduate study abroad ($250,000, gracefully declined)
- **KFAS Undergraduate Scholarship**, Korea Foundation for Advanced Studies 03/2011 – 02/2014
  For undergraduate study ($10,000)
- **Presidential Science Scholarship**, Korea Student Aid Foundations 03/2010 – 02/2014
  For undergraduate study (full tuition + $15,000)
- **Undergraduate Research Program Scholarship**, POSTECH
  Research grant for "Efficient Algorithm for Finding Optimal Meeting Point" ($5,000) 10/2012
  Research grant for "Realistic Influence Maximization for Viral Marketing" ($5,000) 06/2011

Others

- **Valedictorian (Class of 2014)**, POSTECH 02/2014
- **Samsung HumanTech Thesis Competition**, Samsung Electronics
  Bronze Prize, University Division ($5,000) 02/2013
  Two Bronze Prizes, High School Division ($2,000 for each) 02/2009
  Gold Prize, High School Division ($5,000) 02/2008

Talks

- **Reparameterization Gradient for Non-differentiable Models**
  Naver Corp., Seongnam, Korea 01/2019
  NeurIPS 2018, Montreal, Canada (Poster) 12/2018
- **On Automatically Proving the Correctness of math.h Implementations**
  Korea Science Academy, Busan, Korea 06/2018
  Furiosa AI, Seoul, Korea 05/2018
  POPL 2018, Los Angeles, USA 01/2018
  KAIST, Daejeon, Korea (Programming Language Research Group Seminar) 09/2017
  Stanford University, Stanford, USA (Software Research Lunch) 05/2017
- **Verifying Bit-Manipulations of Floating-Point**
  SRI International, Menlo Park, USA 10/2016
  Microsoft Research, Redmond, USA 07/2016
  PLDI 2016, Santa Barbara, USA 06/2016
  Stanford University, Stanford, USA (Software Research Lunch) 05/2016
  Stanford University, Stanford, USA (PSAAP II Meeting) 10/2015
- **A Proof System for Separation Logic with Magic Wand**
  POPL 2014, San Diego, USA (Poster) 01/2014
- **CT-IC: Continuously activated and Time-restricted Independent Cascade Model**
  ICDM 2012, Brussels, Belgium 12/2012

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