Chandrakana Nandi

Paul G. Allen School of Computer Science & Engineering, University of Washington
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Education

PhD in Computer Science at UW CSE, Fall 2015 - Present
Thesis topic: Programming Language Techniques for Computational Fabrication
Advisors: Zachary Tatlock, Dan Grossman
Adobe Research Fellow, 2019

Master of Science, Computer Science
Paul G. Allen School of Computer Science & Engineering, UW, June 2018
Advisors: Zachary Tatlock, Dan Grossman

Master of Science, Computer Science
École Polytechnique Fédérale de Lausanne(EPFL), Switzerland, August 2014
Thesis: Contracts for Real-Time, Safety Critical Systems
Supervisors: Prof.Viktor Kuncak, Dr.Manuel Oriol
M.Sc Research Scholars Program and Swiss Government Fellow

Bachelor of Science, Statistics, Mathematics and Computer Science
Banaras Hindu University (BHU), Varanasi, India, June 2012
Concentration: Statistics
Thesis: Social Network-based Analysis of Behavior
Supervisor: Prof. R.D Singh
University Gold Medalist for graduating with highest GPA

Publications

Peer reviewed conference and workshop papers

1. Chandrakana Nandi, Max Willsey, Amy zhu, Brett Saiki, Yisu Wang, Adam Anderson, Adriana Schulz, Dan Grossman, Zachary Tatlock. Rewrite Rule Inference Using Equality Saturation. OOPSLA 2021
2. Jasper Tran O'Leary, Chandrakana Nandi, Khang Lee, Nadya Peek. Taxon: a Language for Formal Reasoning with Digital Fabrication Machines. UIST 2021
3. Brett Saiki, Oliver Flatt, Chandrakana Nandi, Zachary Tatlock, Pavel Panchekha. Combining Precision Tuning and Rewriting. ARITH 2021
4. Max Willsey, Chandrakana Nandi, Remy Wang, Oliver Flatt, Pavel Panchekha, Zachary Tatlock. Fast and Extensible Equality Saturation. POPL 2021
   Distinguished Paper Award
5. Chandrakana Nandi, Max Willsey, Adam Anderson, James R. Wilcox, Eva Darulova, Dan Grossman, Zachary Tatlock. Synthesizing Structured CAD Models with Equality Saturation and Inverse Transformations. PLDI 2020
6. Chenming Wu, Haisen Zhao, Chandrakana Nandi, Jeff Lipton, Zachary Tatlock, Adriana Schulz. Carpentry Compiler. SIGGRAPH ASIA 2019
7. Chandrakana Nandi, James R. Wilcox, Pavel Panchekha, Taylor Blau, Dan Grossman, Zachary Tatlock. Functional Programming for Compiling and Decompiling Computer-aided Design. ICFP 2018

8. Chandrakana Nandi, Anat Caspi, Dan Grossman, Zachary Tatlock. Programming Language Tools and Techniques for 3D Printing. SNAPL 2017.
9. Chandrakana Nandi, Dan Grossman, Adrian Sampson, Todd Mytkowicz, Kathryn S. McKinley. Debugging Probabilistic Programs. MAPL 2017.
10. Chandrakana Nandi, Dan Grossman, Adrian Sampson, Todd Mytkowicz, Kathryn S. McKinley. Debugging Probabilistic Programs. PPS 2017.
11. Chandrakana Nandi, Michael D. Ernst. Automatic Trigger Generation for Rule-based Smart Homes. ACM SIGPLAN PLAS 2016.
12. Chandrakana Nandi. Automatic Trigger Generation for End User Written Rules for Home Automation. ACM FSE SRC 2016.
13. Chandrakana Nandi: Correctness and Security for Home Automation. POPL SRC 2016.
14. Chandrakana Nandi, Aurelien Monot, Manuel Oriol: Stochastic Contracts for Runtime Checking of Component-based Real-time Systems. CBSE'15: 18th International ACM SIGSOFT Symposium on Component-Based Software Engineering.

Theses

1. C. Nandi: Functional Programming for Compiling and Decompiling Computer-aided Design, MS Thesis, UW, March 2018
2. C. Nandi: Contracts for Real-Time, Safety Critical Systems, Masters Thesis, EPFL, August 2014
3. C. Nandi: Social Network based Analysis of Behavior, Bachelors Thesis, BHU, April 2012

Research Mentorship

1. Adam Anderson, UW BS
2. Brett Saiki, UW BS
3. Grace Oh, High School → Princeton BS
4. Taylor Blau, UW BS → Github
5. Seth Pendergrass, UW BS → Microsoft
6. Melissa Hovik, UW BS/MS → Caltech, Teaching Faculty

TA Experience

1. Winter 2018. CSE 341: Programming Languages, UW, Seattle
2. Spring, Fall 2016. CSE 331: Software Design and Implementation, UW, Seattle
3. Spring 2015: Concepts of Concurrent Computation, graduate level, ETH Zurich
4. Fall 2014: Introduction to Programming, undergraduate level, ETH Zurich

Awards

1. POPL 2021 Distinguished Paper Award
2. Adobe Research Fellowship 2019
3. CRA-W Grad Cohort Workshop 2016 invitee
4. Scholarship and travel grant to attend SIGPLAN PLMW and POPL 2016
5. Student Travel Grants from ACM CCS and PLAS 2016
6. Swiss Government Fellow from September 2012-2014
7. M.Sc Research Scholars Program under Prof. Joseph Sifakis, 2012
8. Five awards in the 95^{th} convocation of BHU, 2013
    - University Gold Medal for having the highest GPA in the Institute of Science, BHU
    - Department Gold Medal for having the highest GPA in the Department of Statistics, BHU
    - Gold Medal for having the highest GPA among all Female students in the Institute of Science, BHU
    - Dr. Basudeo Sahni Gold Medal
    - Cash award and university scholarship holder for academic excellence for 3 consecutive years
9. Secured All India Rank 14 in the IIT-Joint Admission Test for Mathematical Statistics in 2012

Talks

- *Efficient Term Rewriting and Rewrite Rule Inference with Equality Saturation*, Invited Talk, Intel, May 2021
- *Synthesizing Structured CAD Models with Equality Saturation and Inverse Transformations*, Invited Talk, UCSD PL Seminar, Nov 2020
- *Synthesizing Structured CAD Models with Equality Saturation and Inverse Transformations*, Conference Talk, PLDI, June 2020
- *Programming Languages for Computational Geometry and Fabrication*, Expert Speaker, IEEE RAS, UP Section Chapter, Allahabad, India, January 2020
- *Programming Languages for Computational Fabrication*, Adobe Headquarters, San Jose, August 2019
- *Functional Programming for Compiling and Decompiling CAD*, Invited Talk, MPI-SWS, Germany, October 2018
- *Functional Programming for Compiling and Decompiling CAD*, Invited Talk, SUNY Buffalo, October 2018
- *Functional Programming for Compiling and Decompiling CAD*, Conference Talk, ICFP, September 2018
- *Automatic Trigger Generation for Rule-based Smart Homes*, Conference Talk, PLAS, October 2016
- *Debugging Probabilistic Programs*, Internship Talk, Microsoft Research, Redmond, September 2016
- *Use of Contracts for Run-time Verification of Real-time Software*, Invited talk, IEEE RAS, UP Section Chapter, Allahabad, India, August 2015
- *Stochastic Contracts for Runtime Checking of Component-based Real-time Systems*, Conference talk, ACM Sigsoft Symposium on CBSE, Montreal, May 2015
- *Contracts for Real-time and Safety Critical Systems*, LARA, EPFL, August 2014
- *Contracts for Real-time and Safety Critical Systems*, ABB Corporate Research, August 2014

- *A Bi-directional Model Transformation Tool between BIP and FASA*, ABB Corporate Research, November 2013

Program Committees

1. PLDI 2022 PC member
2. Subreviewer, ACM Symposium on Computational Fabrication (SCF), 2020
3. Artifact Evaluation Committee, ASPLOS 2020
4. External Reviewer, ICFP SRC 2019
5. External Reviewer, UBICOMP 2018
6. Reviewer for Elsevier journal, Future Generation Computer Systems 2016

Professional Services

1. Co-author of a SIGPLAN blog on Conferences after COVID: An Early-Career Perspective, March 2021
2. PLMW Panelist, PLDI 2020
3. PSC Chair, Visit Days 2017, UW CSE
4. Student volunteer at POPL 2016
5. ACM-W mentorship program 2015: Mentoring female CSE undergrduates at UW Seattle, currently have two mentees
6. Session Chair at ACM CBSE 2015, session: Component and Composition
7. Member of the organizing team of the 2010 National Conference on High Performance Computing and Applications and Workshop on Graph and Geometric Algorithms organized by Banaras Hindu University

Work Experience

Summer intern — June 2016 - August 2016
RiSE group, Microsoft Research, Redmond

Research Assistant — September 2014 - June 2015
Chair of Software Engineering, ETH Zurich

Software Systems Intern — August 2013 - January 2014
ABB Corporate Research Center, Switzerland

Summer Intern — June 2010 - July 2010
BIOROB, EPFL, Switzerland

Language Proficiency

English: Fluent
French: Basic
German: Basic
Bengali: Mother Tongue
Hindi: Fluent