

SANGEETA CHOWDHARY

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RESEARCH INTERESTS

My research focuses on building systems with novel abstractions to test and debug programs. I am also interested in designing compilers for different domains.

EDUCATION

PhD, Computer Science Rutgers University, New Jersey, USA	2016 – Present
MCA, Computer Science BIT Mesra, Ranchi, India	2008 – 2011
BCA, Computer Science BIT Mesra, Ranchi, India	2005 – 2008

EMPLOYMENT

Research Assistant Rutgers University, NJ, USA	Jan. 2017 – Present
<ul style="list-style-type: none">Designing novel techniques to detect and debug numerical errors.	
Research Intern Microsoft, Redmond, USA	May. 2020 – Aug. 2020
<ul style="list-style-type: none">Added new features and enhanced EVA for a public release. EVA is a compiler for homomorphic encryption, and it targets Microsoft SEAL, a library for fully-homomorphic encryption. EVA hides away all the nuances required to write FHE programs.	
Research Intern Microsoft, Redmond, USA	May. 2019 – Aug. 2019
<ul style="list-style-type: none">Designed and built a llvm backend to automatically transform programs written in a higher language to arithmetic circuits. This enabled verification of programs in zero-knowledge.	
Senior Software Engineer Samsung, Bangalore, India	Aug. 2013 – July 2015
<ul style="list-style-type: none">Designed a feature for smartphones to accelerate download speed while fetching HTTP content. The key insight was to split TCP connection and download files on both networks - cellular and wifi whenever both networks are available.	
Software Engineer Mahindra Comviva, Bangalore, India	Nov. 2011 – Aug. 2013
<ul style="list-style-type: none">Designed and deployed transparent proxy for UTP (BitTorrent) over UDP to improve bandwidth by providing caching for peer-to-peer downloads.	

SCIENTIFIC PUBLICATIONS

- Detecting and Debugging Numerical Errors with Error Free Transformations.*
Sangeeta Chowdhary and Santosh Nagarakatte
In submission
- Parallel Shadow Execution to Accelerate the Debugging of Numerical Errors.*
Sangeeta Chowdhary and Santosh Nagarakatte
Proceedings of the 29th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), 2021.
- EVA Improved: Compiler and Extension Library for CKKS.*
Sangeeta Chowdhary, Kim Laine, Wei Dai, and Olli Saarikivi
Workshop on Encrypted Computing and Applied Homomorphic Cryptography (WAHC), 2021.

4. *Debugging and Detecting Numerical Errors in Computation with Posits.*

Sangeeta Chowdhary, Jay P. Lim, and Santosh Nagarakatte

Proceedings of the 41st ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI), 2020.

HONORS AND AWARDS

Student Research Competition Bronze Medal, PLDI 2019

Finding Rounding Errors and Application Specific Configuration for Posits.

TEACHING EXPERIENCE

CS 415 - Compilers

Teaching Assistant, Rutgers University

Spring 2019

CS 352 - Internet Technology

Teaching Assistant, Rutgers University

Spring 2018

CS 352 - Internet Technology

Teaching Assistant, Rutgers University

Fall 2017

CS 352 - Internet Technology

Teaching Assistant, Rutgers University

Spring 2017

CS 352 - Internet Technology

Teaching Assistant, Rutgers University

Fall 2016