

Saswat PADHI

Senior SWE, Google LLC

📍 Google TM-2, San Jose, CA

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Interested in building **reliable secure systems** with strong **correctness & performance guarantees**.

Employment

- Google** Senior Software Engineer Sep '22 — Present
San Jose, CA chromeOS Performance • chromeOS
Investigating performance bottlenecks across critical user journeys on chromeOS devices.
- Amazon** Applied Scientist II Aug '20 — Sep '22
Boston, MA Automated Reasoning Group (ARG) • Amazon Web Services (AWS)
Led the *inductive proofs* effort: correctness and termination for loops in C • Built and extended several compiler and verifier primitives • Delivered proofs of correctness for multiple AWS projects • Collaborated with product teams to fix discovered bugs • Managed 3 PhD interns
- Microsoft** Research SDE (Part-Time Contract) Oct '17 — Aug '18
Remote Research in Software Engineering (RiSE) • Microsoft Research (MSR)
Designed a neural approach to identify *data frames* in Excel • Implemented a neural network (CNN) with near-human accuracy • Prototyped a data-driven *formula recognition* feature

Education

- Ph.D. (UCLA)** Computer Science (Advisor: [Prof. Todd Millstein](#)) Fall '14 — Spring '20
University of California, Los Angeles • CA, USA
- B. Tech. (IIT-B)** Computer Science and Engineering (with Honors) Fall '10 — Spring '14
Indian Institute of Technology, Bombay • India

Selected Awards

- UCLA** Outstanding Research in CS Award 2020
- PLDI** ACM SIGPLAN Distinguished Paper Award 2020
- UCLA** Dissertation-Year Fellowship 2019 — 2020
- SyGuS, FLoC** Invariant Synthesis (Inv) Competition Winner 2017, 2018
- Microsoft Research** PhD Fellowship 2017 — 2019

Publications

Journals & Conferences Proceedings

- 1C • **PLDI '20** Data-Driven Inference of Representation Invariants.
A Miltner, S Padhi, T Millstein, D Walker.
📄 41st ACM SIGPLAN Conf. on Programming Language Design and Implementation Proc., pages 1 – 15.
- 2C • **CAV '19** Overfitting in Synthesis: Theory and Practice.
S Padhi, T Millstein, A Nori, R Sharma.
📄 31st Intl. Conf. on Computer-Aided Verification Proc., pages 315 – 334.
- 3C • **CC '19** A Static Slicing Method for Functional Programs and Its Incremental Version.
P Kumar, A Sanyal, A Karkare, S Padhi.
📄 28th Intl. Conf. on Compiler Construction Proc., pages 53 – 64.
- 4J • **OOPSLA '18** FlashProfile: A Framework for Synthesizing Data Profiles.
S Padhi, P Jain, D Perelman, O Polozov, S Gulwani, T Millstein.
📄 Proceedings of the ACM on Programming Languages 2 (OOPSLA), 2018, pages 150:1 – 128.
- 5C • **PLDI '16** Data-Driven Precondition Inference with Learned Features.
S Padhi, R Sharma, T Millstein.
📄 37th ACM SIGPLAN Conf. on Programming Language Design and Implementation Proc., pages 42 – 56.

Patents Grants & Applications

- 6G • US 10394874 B2 **Record Profiling for Dataset Sampling.**
D G Simmons, K D J Grealish, S Gulwani, R Kumar, K M Ellis, S Padhi.
- 7G • US 10394874 B2 **Syntactic Profiling of Alphanumeric Strings.**
S Gulwani, P Jain, D A Perelman, S Padhi, O Polozov.
- 8A • US 20200019603 A1 **Systems, Methods, and Computer-Readable Media for Improved Table Identification Using a Neural Network.**
B Zorn, M M J Brockschmidt, P Choudhury, O Polozov, R Singh, S Padhi.

Work Experience

- Princeton Univ.** Verifying Data Structure Implementations
(Visiting Student RA) with *Prof. David Walker*, PL Group • Princeton, NJ Apr '19 — Jun '19
- Microsoft** Mitigating Overfitting in Program Synthesis
(Intern) with *Rahul Sharma*, Systems Group • Bengaluru, India Sep '18 — Mar '19
- Microsoft** Recovering Data Frames and Formulas in Spreadsheets
(Intern) with *Ben Zorn*, RiSE Group • Redmond, WA Jun '17 — Jun '18
- Microsoft** Synthesizing Pattern-Based Profiles for String Datasets
(Intern) with *Sumit Gulwani*, PROSE Group • Redmond, WA Jun '16 — Dec '16
- UCLA** Automated Synthesis of Specifications and Invariants
(Graduate RA) with *Prof. Todd Millstein*, PL and SE Lab • Los Angeles, CA Sep '14 — Jun '20
- IIT-B** Lazy Static Slicing of Functional Programs
(Undergraduate RA) with *Prof. Amitabha Sanyal*, Compilers Group • Mumbai, India Sep '13 — Apr '14
- Google** Automated Testing of Components in Omega Cluster Scheduler
(Intern) with *Smeeta Jalan*, Technical Infrastructure Team • Mountain View, CA May '13 — Jul '13
- TU-Br** Estimating Topical Similarity of Scientific Documents
(Intern) with *Prof. Wolf-Tilo Balke*, Institut für Informationssysteme • Germany May '12 — Jul '12

Academic Service

- PC** Program Committee Member
PLDI (2021), SYNT (at CAV) (2021), DebugML (at ICLR) (2019)
- Reviewer** External Reviewer for Research Papers
CAV (2019), ISEC (2019), PLDI (2020), TSE (2021)
- AEC** Artifact Evaluation Committee Member
OOPSLA (2018, 2019), POPL (2020), SAS (2019)
- OC** Organizing Committee Member
SyGuS-Comp (since 2019)

Teaching

- UCLA** Graduate Teaching Assistant
Programming Languages Spring '16 • Fall '14
- IITB** Abstractions and Paradigms in Programming
Undergraduate Teaching Assistant Spring '14
- IITB** Computer Programming and Utilization
Undergraduate Teaching Assistant Fall '13 • Fall '11