

Saswat PADHI

Senior Software Engineer, Google LLC

📍 Google TM-2, San Jose, CA

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Backend generalist; building **high-performance** systems with strong **reliability** guarantees.

Employment

- Google**
San Jose, CA

Senior Software Engineer
chromeOS Performance • chromeOS
♦ Worked on performance measurement & improvement across browser and OS layers
♦ Designed an ML technique to predict performance metrics from device specifications
♦ Presented the prediction technology (patent pending) at NeurIPS (ML4Sys) 2023

Sep '22 — Present
- Amazon**
Boston, MA

Applied Scientist II
Automated Reasoning Group (ARG) • Amazon Web Services (AWS)
♦ Led the *inductive proofs* project: verifying correctness of C code containing loops
♦ Built and extended compiler and verifier primitives for bounded model checking (CBMC)
♦ Delivered mathematical proofs of correctness and memory safety for AWS projects
♦ Worked with FreeRTOS, s2n, and C Commons teams to resolve discovered bugs
♦ Mentored 4 PhD interns; conducted 30+ AS and SDE interviews

Aug '20 — Sep '22
- Microsoft**
Remote

Research SDE (Part-Time Contract)
Research in Software Engineering (RiSE) • Microsoft Research (MSR)
♦ Designed a CNN to identify *data frames* in spreadsheets with near-human accuracy
♦ Deployed the data frame recognition (patented) technology as an Excel addon
♦ Prototyped *formula recognition*: identifying cells that could be replaced with formulas

Oct '17 — Aug '18

Education

- Ph. D.**

Computer Science
University of California, Los Angeles (UCLA) • CA, USA
♦ Research focus: Programming languages and software systems
♦ Dissertation: *Data-Driven Learning of Invariants and Specifications*
♦ Advisor: [Prof. Todd Millstein](#)

Fall '14 — Spring '20
- B. Tech.**

Computer Science and Engineering
Indian Institute of Technology, Bombay (IIT-B) • India
♦ Graduated with Honors
♦ UG Thesis: *Static Slicing of First-Order Programs using Demand Transformation*
♦ Advisor: Prof. Amitabha Sanyal

Fall '10 — Spring '14


Publications

Journals & Conference Proceedings

- 1C •


PLDI '20

Data-Driven Inference of Representation Invariants.
A Miltner, S Padhi, T Millstein, D Walker.
([ACM SIGPLAN Distinguished Paper Award](#))


- 2C •


CAV '19

Overfitting in Synthesis: Theory and Practice.
S Padhi, T Millstein, A Nori, R Sharma.


- 3C •

CC '19

A Static Slicing Method for Functional Programs and Its Incremental Version.
P Kumar, A Sanyal, A Karkare, S Padhi.



4J •	OOPSLA '18	FlashProfile: A Framework for Synthesizing Data Profiles. S Padhi, P Jain, D Perelman, O Polozov, S Gulwani, T Millstein.	
5C •	PLDI '16	Data-Driven Precondition Inference with Learned Features. S Padhi, R Sharma, T Millstein.	
<i>Workshops & Industrial Case Studies</i>			
6W •	NeurIPS '23 (ML4Sys)	Predicting User Experience on Laptops from Hardware Specifications. S Padhi, S Bhasin, U K Ammu, A Bergman, A Knies. (Invited for Oral Spotlight Presentation)	
7C •	CAV '23	Automated Analyses of IoT Event Monitoring Systems. A Apicellii, S Bayless, A Das, A Gacek, D Jaganathan, S Padhi, V Sharma, M Whalen, R Yadav.	
8W •	NeurIPS '20 (CAP)	OASIS: ILP-Guided Synthesis of Loop Invariants. S Bhatia, S Padhi, N Natarajan, R Sharma, P Jain.	
<i>Patent Grants & Applications</i>			
9G •	Microsoft	Record Profiling for Dataset Sampling. D G Simmons, K D J Grealish, S Gulwani, R Kumar, K M Ellis, S Padhi. (US 10394874 B2)	
10G •	Microsoft	Syntactic Profiling of Alphanumeric Strings. S Gulwani, P Jain, D A Perelman, S Padhi, O Polozov. (US 10394874 B2 , US 11210327 B2)	
11G •	Microsoft	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. (US 12039257 B2)	

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	PhD Fellowship	2017 – 2019

Invited Talks

NeurIPS '23 (ML4Sys)	Predicting User Experience on Laptops from Hardware Specifications.	Dec '23
CAV '19	Overfitting in Synthesis: Theory and Practice.	Jul '19
OOPSLA '18	FlashProfile: A Framework for Synthesizing Data Profiles.	Nov '18
PLDI '16	Data-Driven Precondition Inference with Learned Features.	Jun '16

Academic Service

Program Committee	HCVS (at ETAPS) (2024), PLDI (2021), SYNT (at CAV) (2021), DebugML (at ICLR) (2019), SyGuS-Comp (2019 – 2021)
Invited Reviewer	FoSSaCS (2022), TSE (2021), PLDI (2020), CAV (2019), ISEC (2019)
Artifact Committee	OOPSLA (2018, 2019), POPL (2020), SAS (2019)