

Saswat PADHI

Computer Science (PhD), UCLA

3440 Boelter Hall
University of California Los Angeles, CA 90024
padhi@cs.ucla.edu

🌐 web.cs.ucla.edu/~padhi

🐱 [saswatpadhi](#) · [saswatpadhi](#) · [saswat.padhi](#)

Interests

Program Verification, Program Synthesis, Data-Driven Learning

Education

- 2014 – Present **MS/PhD in Computer Science (advisor: Professor Todd Millstein),**
University of California - Los Angeles, CGPA: 3.79 / 4.0.
- 2010 – 2014 **B. Tech. in Computer Science and Engineering (Honors),**
Indian Institute of Technology - Bombay, CGPA: 8.85 / 10.0.
- 2009 **All India Senior School Certification Examination in Science,**
D.A.V. Public School - Pokhariput, Bhubaneswar, Score: 96.00% (State Rank 4th).
- 2007 **All India Secondary School Examination (Matriculation),**
D.A.V. Public School - Pokhariput, Bhubaneswar, Score: 98.00% (State Rank 3rd).

Publications

- PLDI 2016 **Data-Driven Precondition Inference with Learned Features**
ACM SIGPLAN Conference on Programming Language Design and Implementation
[Saswat Padhi] · Rahul Sharma · Todd Millstein
Artifact <https://github.com/SaswatPadhi/PIE>

Awards and Honors

- 2017 - 2019 Microsoft Research PhD Fellowship
- 2013 Winner of Prezi Scale Contest (on Queueing Theory)
- 2010 – 2014 FIITJEE Scholarship for national rank 43 in IIT-JEE examination
- 2008 KVPY Fellowship (Dept. of Science and Technology, India)
- 2007 National Talent Search Scholarship (NCERT, Govt. of India)
- 2005 Silver medallist (national rank 2) in National Science Olympiad

Research Experience

- Microsoft** **Data-driven Specification Generation**
(Intern) *Dr. Sumit Gulwani, PROSE, Data Group | Redmond, WA* *Summer '16 – Fall '16*
In this on-going research project, we attempt to learn types for data using structural profiling. It enables sampling representative data, detecting outliers etc. Furthermore, this is also shown to be useful in program synthesis based applications as it enables richer user interactions through predictivity and adaptivity. We combine program synthesis and machine learning insights to cluster similar data based on patterns synthesized from data.

UCLA **Feature Learning for Data-driven Specification Inference** *Fall '14 – Winter '16*
(Graduate RA) *Prof. Todd Millstein, PL and SE Lab*

We address a key challenge faced by prior data-driven inference techniques – defining a good search space for the logical formula to be learned. Prior tools required the search space to be specified in advance. Instead, we synthesize new features to grow the search space in a targeted manner as necessary. Combined with machine learning for learning boolean functions, we show that we can infer rich preconditions programs (evaluated on OCaml libraries). We have also shown that our feature learning technique led to a new, more expressive and less onerous form of automatic program verification (evaluated on C++ programs).

IIT Bombay **Lazy Static Slicing of Functional Programs** *Fall '13 – Spring '14*
(Undergraduate RA) *Prof. Amitabha Sanyal, Compilers Group*

I was investigating static analysis techniques for backward slicing functional programs – extracting the parts of an expression involved in the computation of the final result. We proposed a new technique for computing slices of first order functional programs, using a lazy technique which transformed a slicing demand on an expression to a demand on its sub-expressions.

TU Braunschweig **Bibliometric vs Semantic Measures for Estimating Topical Similarity** *Summer '12*
(Intern) *Prof. Wolf-Tilo Balke, Chair for Institut für Informationssysteme*

I was interested in using ideas in knowledge bases and information systems to improve searches on semi-structured documents. The goal of this project was to conduct a comparative analysis of bibliometric vs semantic similarity measures in estimating topical similarity of scientific literatures.

Professional Experience

Google **Automating testing & maintenance of Omega components** *Summer '13*
(SWE Intern) *Smeeta Jalan, Technical Infrastructure Team | Mountain View, CA*

I was working with the Borg-Omega (Google's cluster management system) teams on automating certain aspects of testing the system. The goal was to benchmark the Omega components with respect to Borg ones, using real traffic data. I was also responsible for automating the updates and maintenance of Omega components.

Teaching Experience

UCLA **Programming Languages** *Fall '14 • Spring '16*
Graduate Teaching Assistant

IIT Bombay **Abstractions and Paradigms in Programming** *Spring '14*
Undergraduate Teaching Assistant

IIT Bombay **Computer Programming and Utilization** *Fall '13 • Fall '11*
Undergraduate Teaching Assistant