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divyeshunad-
kat.github.io
in divyeshunadkat

Divyesh Unadkat

Education

<i>Ph.D.</i>	Computer Science & Engineering , Indian Institute of Technology Bombay, Mumbai. CPI: 9.48/10	2023
<i>B.E.</i>	Computer Engineering , Dharmsinh Desai University, Nadiad. Aggregate: 80.12 %	2006 – 2010

Ph.D. Thesis

Title: *Techniques for Precise and Scalable Verification of Array Programs* 📄
Supervisors: Prof. Supratik Chakraborty 📄, Prof. Ashutosh Kumar Gupta 📄
Institution: Indian Institute of Technology Bombay, Mumbai
Area: Formal Methods and Software Verification

Experience

Senior Staff R&D Engineer , Synopsys, Hyderabad.	Feb'24–Present
Staff R&D Engineer , Synopsys, Hyderabad.	Aug'23–Jan'24
Scientist/Senior Software Engineer , TCS Research, Pune.	Jun'21–Jul'23
Researcher/Software Engineer , TCS Research, Pune.	Jun'10–May'21
Research Intern , TCS Research, Pune.	Dec'09–Apr'10

Technical Skills

Programming: C++, C, Java, Python, LaTeX
Compilers: LLVM, Clang, GNU Tool Chain (GCC, GDB, Make)
Research Tools: Z3, CVC5, CBMC, Daikon, CPAChecker, InvGen
Development Tools: Visual Studio Code, Emacs, Vim, Eclipse
Version Control: Git, Perforce, CVS
Telecommunication Tools: Google Hangouts, Microsoft Teams, Zoom, Slack
OS: Linux, Windows.

Tool Dev

<i>Diffy</i>	Generalized Inductive Reasoning for Arrays. Published in CAV 2021 [3]. repository
<i>Vajra</i>	Full-Program Induction. Published in TACAS 2020 [4, 5], STTT 2022 [2]. repository
<i>Tiler</i>	Verifying Array Programs by Tiling. Published in SAS 2017 [6]. repository
<i>DIV</i>	Dynamic Inference Verifier. Internal Tool, TCS Research. Published in HVC 2013 [8]
<i>ScaleM</i>	Scaling Model Checking with Abstractions Inferred using Dynamic Analysis. Internal Tool, TCS Research. Published in ICST 2013 [7]
<i>AutoGen</i>	Automatic Test-case Generation using Model Checking. Internal Tool, TCS Research

Publications

- [1] Divyesh Unadkat. Techniques for Precise and Scalable Verification of Array Programs. *Doctoral Dissertation, IIT Bombay*, December 2022.
- [2] Supartik Chakraborty, Ashutosh Gupta, and Divyesh Unadkat. Full-Program Induction: Verifying Array Programs sans Loop Invariants. In *International Journal on Software Tools for Technology Transfer (STTT)*, pages 843–888, September 2022.
- [3] Supartik Chakraborty, Ashutosh Gupta, and Divyesh Unadkat. Diffy: Inductive Reasoning of Array Programs using Difference Invariants. In *Proc. of the 33rd International Conference on Computer-Aided Verification (CAV)*, pages 911–935, 2021.
- [4] Supartik Chakraborty, Ashutosh Gupta, and Divyesh Unadkat. Verifying Array Manipulating Programs with Full-Program Induction. In *Proc. of the 26th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, pages 22–39, 2020.
- [5] Mohammad Afzal et. al. VeriAbs : Verification by Abstraction and Test Generation (Competition Contribution). In *Proc. of the 26th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, pages 383–387, 2020.
- [6] Supratik Chakraborty, Ashutosh Gupta, and Divyesh Unadkat. Verifying Array Manipulating Programs by Tiling. In *Proc. of the 24th International Static Analysis Symposium (SAS)*, pages 428–449, 2017.
- [7] Anand Yeolekar et. al. Scaling Model Checking for Test Generation using Dynamic Inference. In *Proc. of the 6th International Conference on Software Testing, Verification and Validation (ICST)*, pages 184–191, 2013.
- [8] Anand Yeolekar and Divyesh Unadkat. Assertion Checking using Dynamic Inference. In *Proc. of the 9th Haifa Verification Conference (HVC)*, pages 199–213, 2013.

Interests

Sports: Table Tennis, Volleyball, Football
Recreation: Yoga, Novels, Music, Movies

Links

Webpage: <https://divyeshunadkat.github.io/>
LinkedIn: <https://www.linkedin.com/in/divyeshunadkat/>
GitHub: <https://github.com/divyeshunadkat/>
dblp: <https://dblp.uni-trier.de/pers/hd/u/Unadkat:Divyesh>
Scholar: <https://scholar.google.co.in/citations?user=8d48NqMAAAAJ>
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Contact

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References

Available upon request.