

Vidhya Tekken Valapil

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RESEARCH INTERESTS: Distributed Systems, Software Fault Tolerance, Formal Methods, Automated Software Testing.

EDUCATION:

Michigan State University, East Lansing, MI, USA.
Ph.D. in Computer Science (Advisor: Prof. Sandeep Kulkarni)

Eastern Michigan University, Ypsilanti, MI, USA.
M.S. in Computer Science.

Anna University, Chennai, TN, India.
B.Tech. in Information Technology.

🎓 **GPA: 4.0** Aug 2015 - June 2020

🎓 **GPA: 3.97** Aug 2013 - Aug 2015

🎓 **GPA: 3.9** Sep 2007 - May 2011

EXPERIENCE:

Research Engineer

GE Global Research Center, Niskayuna, NY, U.S.

July 2020 - Present

- Duties involve identification of existing validation and verification tools, leverage the applicability of the identified tools, and create new tools and approaches to ensure reliability and correctness of safety critical infrastructure and systems used in the industry.

Teaching Assistant

Michigan State University, East Lansing, MI, U.S.

Aug 2019 - Dec 2019,

Courses: Discrete Structures, Operating Systems, Web Application Development, Mobile Application Development

Jan 2019 - May 2019,

Sep 2015 - Apr 2016

- Duties involve holding office hours for student advising/mentoring, grading assignments, projects and exams.

Software Engineering Ph.D. Intern

Cisco: Tetration Analytics, Palo Alto, CA, U.S.

May 2019 - Aug 2019,

E2E Testing, Data Analysis Application, Anomaly Detection Prototyping

May 2018 - Aug 2018

- Developed E2E tests in **Python** to check if routes to specific internal endpoints are blocked/accessible as expected. Developed Jupyter notebooks in **Scala** and Python to perform aggregation and analysis of network flow data. Created a basic prototype to perform **network anomaly detection** by adjacency analysis.

TAN (Tetration Alerts Notifier) Application Development

- Sending network flow-based alerts from Internal Kafka to external notifiers/loggers like Syslog, Kinesis, PagerDuty, Slack and Email. Application development primarily involved programming in **Go**.

Research Assistant

Michigan State University, East Lansing, MI, U.S.

Jan 2020 - May 2020,

Monitoring Distributed Systems using SMT Solvers

Aug 2018 - Jan 2019, May 2016 - Apr 2018

- Detecting concurrent latency bugs in distributed systems using Z3 (theorem prover from Microsoft Research). Simulation primarily involves programming in **C++, Python, PowerShell, XML and Java**.

Self-Stabilizing distributed systems with unbounded counters

- Bounding of unbounded counters in distributed systems, to enable self-stabilization in the event of transient faults. Bounds determined by analysis showed that unbounded counters can be represented using bounded counters (of **32 bits in size** on average) and time.

Graduate Assistant

Eastern Michigan University, Ypsilanti, MI, U.S.

Aug 2013 - May 2015

- Served as a **Software/Equipment Specialist**, assisting Dr. Marina McCormack in Faculty Training and Lab Management at the Bonisteel Lab Instructional and Technology Services. Also, conducted peer to peer training on Faculty/Student assistance, software/hardware troubleshooting and **Mobile teaching/learning** for Lab staff.

Test Engineer & System Engineer Trainee

Infosys Limited, TN, India

Sep 2011- July 2013

- Project SEPA CT: Analyzed and tested critical banking programs and core functionality of banking applications under parallel development through **System Testing, Integration Testing and End to End Testing**.

AWARDS:

- 🏆 **Outstanding Service Graduate Student Award**, Computer Science and Engineering, Michigan State University, 2020.
- 🏆 **Grace Hopper Scholar**, Grace Hopper Celebration 2019, Orlando, Florida.
- 🏆 **Distinguished Paper Award**, 13th European Dependable Computing Conference (EDCC Sep. 2017)
- 🏆 **Outstanding Graduate Student Award**, Department of Computer Science, Eastern Michigan University, 2014-2015

SKILLS: Programming: Go, C++, Python, Scala, XML, C, Java, HTML, CSS, JavaScript, PHP, MySQL and Perl. **SMT Solvers:** Z3, Yices.

RECENT PUBLICATIONS:

- 📄 Efficient Two-Layered Monitor for Partially Synchronous Distributed Systems, (joint work with S.Kulkarni, E.Torng, G.Appleton), 39th International Symposium on Reliable Distributed Systems, (SRDS September 2020)
- 📄 Preserving stabilization while practically bounding state space using incorruptible partially synchronized clocks. (joint work with S. Kulkarni), Distributed Computing, Nov. 2019 (Conference version was recognized as Distinguished Paper at EDCC Sep. 2017)
- 📄 Biased Clocks: A Novel Approach to Improve the Ability to Perform Predicate Detection with O(1) Clocks, (joint work with S.Kulkarni), 25th International Colloquium on Structural Information and Communication Complexity (SIROCCO June 2018)