

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)

🎓 **GPA: 4.0**

Aug 2015 - May 2020 (Expected)

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

🎓 **GPA: 3.97**

Aug 2013 – Aug 2015

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

🎓 **GPA: 3.9**

Sep 2007 - May 2011

EXPERIENCE:

Research Assistant

Michigan State University

Jan 2020 - Present,

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.

Teaching Assistant

Michigan State University

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

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**.

Graduate Assistant

Eastern Michigan University

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, 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:

- 🏆 **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:

- 📄 Preserving Stabilization while Practically Bounding State Space, (joint work with S. Kulkarni) 13th European Dependable Computing Conference (EDCC Sep. 2017) – Journal extension was published in Distributed Computing titled “Preserving stabilization while practically bounding state space using incorruptible partially synchronized clocks” (Nov 2019)
- 📄 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)
- 📄 Monitoring Partially Synchronous Distributed Systems Using SMT Solvers, (joint work with S. Yingchareonthawornchai, S.Kulkarni, E.Torng, M. Demirbas), 17th International Conference on Runtime Verification (RV Sep. 2017)