

EDUCATION

Ph.D. in Computer Science and Engineering, GPA 3.73/4 May 2023
• The Ohio State University (OSU), Columbus, Ohio.

Bachelor of Technology, Computer Engineering, CGPA 7.8/10 May 2013
• Malaviya National Institute of Technology (MNIT), India

LANGUAGE AND TECHNOLOGIES

- Formal Methods, Symbolic Verification, Tamarin, Proverif
- Python, C, C++, Java, PHP, JavaScript, CSS, jQuery
- Android, Windows and Linux Automation, Microsoft Business Intelligence Suite (SQL Server Integration and Analysis Server), Microsoft SharePoint Online 2013, Linux Device Driver, Network Programming, Assembly Language, SQL, Multidimensional Expressions (MDX), Python graph-tools, numpy, Tensorflow, Tasker, Autoapps, SQL Server 2012/2014, MySQL 5.6

EXPERIENCE

System and Security

Formal Methods Graduate Research Associate, OSU July 2019 - Present

- Published paper in USENIX Security Symposium, Aug. 2021. "Towards Formal Verification of State Continuity for Enclave Programs."
- Published paper in Proceedings of the Automotive and Autonomous Vehicle Security (AutoSec) Workshop 2022, San Diego, CA, April 2022. "Towards A TEE-based V2V Protocol For Connected And Autonomous Vehicles".
- Ongoing research work on Formal Methods, TEE, and Protocol Security. Tamarin, Proverif

Large Scale Network Embedding Graduate Research Associate, OSU July 2018 - May 2019

- Developed network embedding as matrix factorization. c++
- Improved space-time complexity and scalability using the state-of-the-art linear algebra libraries and threading with CPU.

Darknet Research Graduate Research Associate, OSU Dec 2017 - May 2018

- Developed an automated data crawler for darknet on the Tor network. Python, GUI Automation
- Identified and extracted measures, and built a network graph to analyze and derive strategies to deal with the illegal drug trade. Contribution acknowledged in American Journal of Sociology, Volume 127, Number 3, November 2021

System Engineer, Intern Defense Research and Development Organization, India May 2012 – Jun 2012

- Developed Linux device driver and an application program to configure, monitor, and analyze the 4-channel 1553B Military Standard PCI (65569i) card's memory configuration. C

Network Security (Undergrad Thesis and Master's Coursework) July 2012 - May 2013

- Implemented *DNS Poisoning* using 'Port Exhaustion Technique' over a vulnerable server. C, Assembly Language
- Designed and developed *multi-threaded SSL secured FTP and Shell-login* server and client program. C
- Simulated Bleichenbacher RSA attack and proposed a countermeasure based on queried data analytics. Python, C

Data Analytics, Warehouse, and Testing

Quality Assurance Intern ANSYS Inc, Canonsburg, PA May 2018 - August 2018

- Built a schematic regression library (OOPS) from scratch for all available TwinBuilder components. Python
- Designed and implemented create, move, copy-paste, flip and rotate validation. Python

Software Engineer

MAQ Software, India

July 2013 - May 2015

- Designed and automated a testing suite for a terabyte-scaled data warehouse. MYSQL, MSBI
- Designed and integrated SQL Server Analysis Services (Multidimensional Database) with the main project.
- Developed 20+ modules for full Windows automation and productive work organization. AutoHotkey

Personal Projects

github.com/mohitWrangler/visGraphAlgo

Oct 2016 - Dec 2017

- Develop a python platform with *GDK-UI, multithreaded interactive functionality* to visualize and control the steps of graph algorithms. Python, graph-tools, gdk-threads

github.com/mohitWrangler/androidAutomationTools

Jan 2015 - Dec 2017

- Developed automation tools--Definitions from Merriam Webster and Collins using Google Assistant, a better calendar notification UI, custom news radio, and TED Video downloader, Inspired by personal use case. Tasker, Autoapps, IFTTT

Machine Learning

CIFAR-10 Image Recognition using Convolutional Neural Network (Coursework)

Sep 2017 - Nov 2017

- Proposed and implemented a *computationally lighter* alternative to the dropout randomization technique.
- Developed two image preprocessing techniques -- static and dynamic squashing of color channel values in bands, and transformation of pixels with low frequency to dominant pixels. Python, Tensorflow

Full Stack Web Development and Java

Eco-Friendly Resources Management Portal (Coursework)

Jan 2012 - Apr 2012

- Full-stack development of web-platform and backend database for managing and promoting eco-friendly resources for organizations to earn higher eco-score. HTML, CSS, JavaScript, PHP

Placement Automation System Software Development (Undergrad Employment)

Jul 2011 - Dec 2011

- Designed UI for student and employer dashboard webpage. HTML, CSS
- Developed employer's dashboard functionality to set up job and qualification information. JavaScript, PHP

Operating System Disk Explorer Environment (Coursework)

Jul 2011 - Dec 2011

- Developed an easy and interactive GUI to manage and browse disk files in Windows XP. Java

SELECTED LEADERSHIP, ACHIEVEMENTS, AND AWARDS

- Received Sesquicentennial Student Scholar Leadership Program and the Scholarship. 2019 - Present.
- Treasurer at SKY at Ohio State University. 2021 - Present.
- Session chair for Automotive and Autonomous Vehicle Security (AutoSec) Workshop, San Diego, CA. 2022
- Emcee in the Vision Conference organized by Bridges Internationals. 2020.
- University Liaison with International Friendship Student Organization at Ohio State University. 2018-2020.
- Spot Award for hard work and excellent automation of the project at MAQ Software, India. 2013.
- Appreciation Letter for pioneering implementation of Linux Device Driver during intern at Defense Research and Development Organization, India. 2012.
- 1st position in Cluster Level Computer Science and Intel Exhibition, India. 2006

REFERENCES

- Dr. Zhiqiang Lin, Professor, Dept. of Computer Science and Engineering, The Ohio State University. zlin@cse.ohio-state.edu
- Dr. Yingqian Zhang (co-advisor), Professor, Dept. of Computer Science and Engineering, Southern University of Science and Technology. yingqianz@acm.org
- Dr. Srinivasan Parthasarathy, Professor, Dept. of Computer Science and Engineering, The Ohio State University. srini@cse.ohio-state.edu