

# MOHAMMAD MOEIN SHAFI

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## RESEARCH INTEREST

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- Computer Networks
- Computer Security
- Internet of Things (IoT)
- Cyber Physical Systems
- Machine Learning
- Operating Systems

## EDUCATION

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**M.S. in Computer Science** Toronto, CA  
York University, Computer Science [2022 - Present]

**B.S. in Computer Engineering** Tehran, IR  
University of Tehran, Software Engineering [2017 - 2022]  
GPA: A, Last 2 Year's GPA: A+

## RESEARCH EXPERIENCE

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**Research and Development at York University + Cpacket Company** Toronto, CA  
**Detecting Network Attacks**, under supervision of [Dr. Arash Habibi Lashkari](#): [May 2022 – Present]  
Analyzing network traffic to detect network attacks in PCs. This research is a collaboration between the Cpacket company (in the United States) and York University (in Canada).

**Research Assistant at York University** Toronto, CA  
**Detecting Malicious Behaviors**, under supervision of [Dr. Arash Habibi Lashkari](#): [Sep 2022 – Present]  
Analyzing network traffic to detect malicious behaviors in IoT devices using artificial intelligence.

**Research Assistant at York University** Toronto, CA  
**Profiling Benign Behaviors**, under supervision of [Dr. Arash Habibi Lashkari](#): [Apr 2022 – Present]  
Analyzing network traffic to profile the benign behaviors and using it to detect malicious behaviors with the help of artificial intelligence.

**Research and Development at University of Tehran + Mahsan Company** Tehran, IR  
**Packet handling with XDP**, under supervision of [Dr. Nasser Yazdani](#): [Jun 2021 – Feb 2022]  
I worked on a project about high-performance packet handling (capture, inject, manipulate) using a new approach in the Linux kernel (version > 4.18) named **XDP**. This was also my undergraduate thesis (final project) that was done in a collaboration with [Mahsan Company](#) (described below). Other utilities of this approach are for preventing DDOS attacks, load balancing, monitoring, etc.

**Research Assistant at University of Tehran** Tehran, IR  
**Remote access systems and test automation**, under supervision of [Dr. Mehdi Kargahi](#): [Sep 2020 – Mar 2021]  
The implementation of an online tool that will allow teachers and students to access the university's laboratory boards (e.g. raspberry-pi boards) from outside the university and run automated tests on the boards. In order to accomplish this, I used different tools including [LAVA](#) and [QEMU](#).

## TEACHING EXPERIENCE

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**Teaching assistant experience:**

- Introduction to Computer Security [Fall 2022]
- Computer Networks [Spring 2021, Fall 2021, Spring 2022]
- Computer Architecture [Fall 2021, Spring 2022]
- Computer Architecture Lab [Fall 2021, Spring 2022]
- Computer Aided Design [Fall 2020, Fall 2021]
- Introduction to Computing Systems and Programming [Fall 2020, Fall 2021]

## WORK EXPERIENCE

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**Software Engineer** Tehran, IR  
[Mahsan Company](#) [Jul 2019 – Aug 2022]  
I worked in the infrastructure team and dealing with various issues in this area. My work was mostly about computer networks challenges in the Linux operating system. As part of my work at this company, I worked mostly with **SNMP** protocol as well as some useful libraries and tools in the networking industry, such as [Netmap](#), [XDP](#), [Libpcap](#), [Zabbix](#), etc. Finally, in my last year, I was involved in a project aimed at customizing and improving the security of the Ubuntu distribution of Linux operating system.

## VOLUNTARY WORKS

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### Supervisor in ACM Summer of Code

University of Tehran

Tehran, IR

[Summer 2021]

The ACM summer of code is an event held every year for younger students who aim to improve their coding skills and challenge their knowledge of software design as software engineers. It was my role to **supervise** and manage the work of students and mentors in the **software engineering** field. We implemented an online game store in which you could buy and sell different kinds of games. The backend was developed using the **Java Spring** framework, the frontend was developed using **React JS**, the database was **MySQL**, and the version control system was **Git**.

## SELECTED COURSES

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- Computer Networks (A+)
- Cyber Physical Systems (A)
- Operating Systems (A+)
- Software Engineering (A+)
- Artificial Intelligence (A)
- Introduction to Computer Security (A)
- Internet Engineering (A+)
- Computer Aided Design (A+)
- Object Oriented Design Pattern (A+)
- Compiler Design & Construction (A+)

## SELECTED PROJECTS

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- Benign Traffic Generator, **Python** [2022]
- Two Network (pcap) Analyzer Based on the Network and Application Layers, **Python** [2022]
- Fast and Reliable Packet Capturing, Manipulating, and Injecting Using XDP, **C + eBPF** [2021]
- Implementation of Software Defined Network (SDN), **Python** [2020]
- 3-Players Bluetooth Based Pong Game (real-time), **Android (Java)** [2021]
- Classifying animal images using neural networks, **Python (TensorFlow + Sklearn)** [2021]
- Movies' type prediction using machine learning, **Python (Sklearn)** [2021]
- Course Enrollment Website, **Java (Spring framework) + React-JS + MySQL + Docker + Kubernetes** [2021]
- Make different changes (add shared memory, change scheduling, etc.) into XV6 OS, **C + Assembly** [2020]
- Telegram (social network) bot for like different carpets pictures and collect/process data, **Python** [2021]
- Implementation of a Customized Compiler, **C/Cpp + Flex/Bison** [2020]
- Implementation of Arm and MIPS processor, **Verilog + Modelsim + Quartus** [2021, 2019]

## SKILLS

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- **Software Programming Languages:** C/Cpp, Python, Java, Bash.
- **Hardware Programming Languages:** Verilog, VHDL, Assembly.
- **Operating Systems:** Linux, Windows.
- **Web and Databases:** HTML, CSS, Javascript, React-JS, MySQL, SQLite, Redis,
- **Programming Tools:** Docker, Kubernetes, Git, Mercurial, OpenMP, SIMD, Intel Parallel Studio, Flex/Bison, CMake.
- **Network Tools:** Netmap, XDP, Zabbix, Net-SNMP.
- **Simulation/Emulation Tools:** QEMU, Proteus, Modelsim, Quartus, Xilinx, LAVA (Linaro).
- **Software Engineering:** Object Oriented Design Patterns, Unit Testing, Project Management Methods.
- **Other:** Passionate, Creative, Team-oriented, Hard-working (with a history of 352 working hours in a month at Mahsan company), Self-motivated, have a high Self-confidence and always eager to learn new things. Would enjoy working in a friendly team.

## LANGUAGES

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- Persian (native)
- English (fluent)
- Arabic (familiar)

## HOBBIES & INTERESTS

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- Sports (volleyball & football)
- Board Games & Video Games

## REFERENCES

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- [Dr. Arash Habibi Lashkari](#), Associate Professor, York University (Canada)
- [Dr. Naser Yazdani](#), Professor, University of Tehran (Iran)
- [Dr. Mehdi Modarressi](#), Assistant Professor, University of Tehran (Iran)
- [Dr. Saeed Safari](#), Associate Professor, University of Tehran (Iran)