

# Mahmut Kapkic

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## Objective

A resourceful and self-driven undergraduate student who has been experienced and interested in Cybersecurity for almost six years with strong research experience and leadership. Nowadays, works on Cryptanalysis and Binary Exploitation. Willing to have a solid academic background in Cybersecurity and be an academic researcher.

## Education

### Atılım University

B.S. IN COMPUTER ENGINEERING WITH MATHEMATICS (CRYPTOGRAPHY) MINOR

- GPA: 3.24/4.00 (With 1 semester High Honor)

Ankara, Turkey

Sep 2021 - PRESENT

## Skills Summary

### Security Skills

Binary Analysis, Reverse Engineering, Cryptology, Network Security, Pentesting, Wireless Security

### Programming

Python, C/C++, Bash, x86-64 Assembly, Sage

### OS/App Experiences

IDA, Ghidra, GDB, Wireshark, Burp Suite

## Experience

### Fame Crypt, Cryptosystem Design Analysis Consultancy and Test Co. Ltd.

RESEARCH AND DEVELOPER INTERNSHIP

- Developed a block cipher analysis framework, which is used for constructing more secure designs. It contains calculators for DDT, LAT, etc., and a new cryptanalysis technique based on MILP.
- Research on CRYSTALS-Kyber Algorithm, which is a post-quantum cryptographic algorithm.

Ankara, Turkey

July 2023 - Oct 2023

### Interprobe Information Technologies Inc.

CANDIDATE ENGINEER AT CRYPTOLOGY DEPARTMENT

- Private due to information disclosure statement.

Ankara, Turkey

Apr 2023 - Jun 2023

## Conference and Journal Publications

### Privacy Issues in MR Images

INTERNATIONAL CONFERENCE ON INFORMATION SECURITY AND CRYPTOLOGY (ISCTURKEY 2022)

- Mahmut Kapkic, Şeref Sağiroğlu

Oral

Oct. 2022

## Notable Projects

### Auto Focus Portable Laser Communication System

UNDERGRADUATE RESEARCH PROJECT (PARTICIPANT)

- Undertook a laser communication project at the Undergraduate Research Project to gain experience applying communication protocols in real-world cases.

Ankara, Turkey

Dec. 2021 - Jun. 2022

### Autonomous Ransomware Decryptor

HEAD COORDINATOR

- Contributed to this project by utilizing my skills in Project Management, Cryptographic Algorithm Detection, and Binary Analysis.

Ankara, Turkey

Nov. 2022 - PRESENT

### Prime Number Dataset Generation and Checking Model

POSTER PRESENTATION

- Accepted poster presentation by TUBITAK (The Scientific and Technological Research Council of Turkey)

Gebze, Turkey

May. 2023

## References

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**Prof. Dr. Şeref Sağiroğlu** Gazi University, Computer Engineering Department, ss@gazi.edu.tr

## Professional Development

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### COMPETITIONS(SELECTED)

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Aug 2023	<b>1st Place</b> , TurkTelekom Cybersecurity Education and Competition	<i>Istanbul, Turkey</i>
Oct 2020	<b>6th Place</b> , Battleware CTF	<i>Turkey</i>
Aug 2021	<b>7th Place</b> , HackIstanbul2021 Bug Bounty Competition	<i>Istanbul, Turkey</i>
Aug 2022	<b>7th Place</b> , HackKaradeniz2022 Cybersecurity Competition	<i>Zonguldak, Turkey</i>
Oct 2022	<b>9th Place</b> , STM 2022 CTF	<i>Istanbul, Turkey</i>
Sep 2020 - Aug 2021	<b>District Representative</b> , 81SiberKahraman long-term Cybersecurity Education and Competition	<i>Ankara, Turkey</i>

### ATTENDED WORKSHOPS(SELECTED)

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Apr 2017 **Hacktrick'17**, Fundamentals of Cyber Security  
May 2018 **Hacktrick'18**, Practical Penetration Testing  
May 2022 **Hacktrick'22**, Practical IoT Hacking

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## Undergoing Projects and Researches

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### 8x8 APN Function Generation with Evolutionary Algorithms and Chaos Theorem

- Block ciphers use substitution functions to randomize their process, but with linear and differential cryptanalysis, it is possible to find the secret key. Using an APN function for substitution function makes that attack impossible to crack.
- And I believe that finding the 8x8 APN function could be possible with evolutionary algorithms and chaos theorem.

### IoT Attack Surfaces and Vulnerability Classification Mapping

- IoT devices play a significant role in shaping the current technology landscape. Due to their architecture, they are often susceptible to many vulnerabilities. There should be a report on the problems for further mitigation and awareness.