



# Arman Kolozyan

*MSc Student Computer Science (Software Engineering) at Vrije Universiteit Brussel | Nokia Bell Labs Intern*

Research Interests:	Zero-Knowledge Proofs, IoT Security, Network Protocols, Static Analysis
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## RESEARCH EXPERIENCE

September 2024  
– Present

### Nokia Bell Labs, Antwerpen

#### Security Research Intern

- Conducting research focused on the security analysis of Zero-Knowledge Proofs (ZKPs).
- Part of my Master's thesis.
- Developing a language-agnostic bug detector for ZKP programs.

July 2024 –  
September 2024

### COSIC (KU Leuven), Leuven

#### Security Research Intern

- COSIC is a leading research institution in cryptography and software/hardware security.
- Conducted an in-depth security analysis of the Matter standard for smart home communication, with the aim of identifying potential security weaknesses and vulnerabilities.
- Performed formal verification of Matter's protocols using automated tools, which involved modeling and verifying the protocols.
- Worked under the guidance of Dr. Dave Singelée, Sayon Duttagupta, Georgio Nicolas, and Professor Bart Preneel, whose combined expertise was instrumental to the project.
- This experience strengthened my skills in protocol security analysis and formal verification, and expanded my understanding of security challenges within the IoT field.

September 2024

### Technische Universität Darmstadt, Darmstadt

#### Summer School Participant

- Attended the ACM Europe Summer School on Distributed and Replicated Environments (DARE) 2024 in Germany.
- The summer school was focused on advanced topics in distributed systems.
- It offered me both theoretical and practical knowledge, with lectures focusing on consistency models, verification techniques, and programming models for distributed applications.
- Participated in hands-on sessions and conducted a small research project on enhancing decentralized access control algorithms with a focus on security.

September 2022  
– June 2023

### Vrije Universiteit Brussel, Brussels

#### Bachelor's Thesis

- Conducted research on enhancing the speed of modular static analyses.
- Identified limitations in existing worklist heuristics.
- Designed more efficient ones.
- Benchmarked all new and existing worklist heuristics.

## TEACHING EXPERIENCE

3 years

### Vrije Universiteit Brussel

#### Programming Lecturer

- Lecturer for additional programming classes (in the programming language Scheme), organized for first year Computer Science students at my university.

November 2021 –  
November 2024

- Taught these exercise sessions together with a few other fellow students.
- Always prepared slides to help the students refresh the necessary theory. Then we solved exercises in preparation for the exam.
- During the coronavirus period, I gave a session online and an on-campus session every other week.
- If the session went online, I had the students share their code via a code-sharing website where I provided comments to help them make progress.

September 2022  
- September  
2023

### Lecturer of Mathematics

- Taught the following topics of mathematics for both mathematics and non-mathematics background students: Linear Algebra, Analysis, Functions, Plane Geometry, Three Dimensional Geometry.
- This was my first experience teaching a class of more than 40 students.

August 2021 -  
September 2021

### Teaching Assistant of Preparation/Bridge Course in Mathematics

- During the coronavirus pandemic.
- Organized live question sessions.
- Answered students' questions on discussion fora.
- Corrected mathematics tests.
- Updated the solutions of exercises on the website of the mathematics book 'Wiskundige basisvaardigheden' (basiswiskunde.be).

December 2021 -  
Present

### Infogroep Student Association

#### Teaching Volunteer

- Infogroep is the student association dedicated to supporting Computer Science students at the Vrije Universiteit Brussel.
- Organized and taught classes on various subjects, including a preparation workshop for my university's Capture the Flag (CTF) security competition.
- Taught an introductory session on using LaTeX (Overleaf) for writing academic essays and reports.

## WORK EXPERIENCE

3 years

### Vrije Universiteit Brussel

#### Webmaster

April 2022 -  
September 2022

- Helped with the development of the new website of the Vrije Universiteit Brussel (VUB).
- Regularly made small adjustments to the site, created new events, etc.
- Followed up a ticketing system and resolved tickets from VUB staff and external people.

July 2022

#### Integration of Usolv-it Exercises into the Canvas Learning Platform

- Wrote mathematics problems in LaTeX format.
- Managed mathematics assignments in Usolv-it.
- Converted Usolv-it assignments into tests and then migrated these to the Canvas learning platform.

September 2021

#### Organization of Pretests in Mathematics, Chemistry and Physics

- Corrected pre-tests (which test the prior knowledge of first-year university students).
- Supervised when the students took their tests.

August 2022

### Argenta, Antwerpen

#### API Inventarisation Internship

- Argenta is a Belgian bank and insurance group offering financial services in Belgium, the Netherlands, and Luxembourg.
- Spent a month in Argenta's IT Shared Service Integration department, assisting with the identification of available APIs.
- Created a comprehensive list of technical and functional descriptions of APIs and researched optimal tools for inventory setup and maintenance.
- Worked three days per week at the headquarters in Antwerp and two days from home, with weekly follow-ups.

- This role brought me a first business experience in IT, improved my skills in conveying information smoothly and correctly, enhanced my ability to ask targeted questions to colleagues, and introduced me to agile/scrum methodologies.

July 2020 -  
September 2020

**ZEB, Merchtem**  
**Logistics and Outlet Employee**  
RFID, Sorter, Optical Scanning.

July 2019 -  
August 2019

**Jette Clean**  
**Cleaner**

March 2019

**Famiris, Brussels**  
**Helpdesk**

- Famiris is the federal agency responsible for managing child benefits in Belgium.
- Assisted its staff with technical problems.

**EDUCATION**

September 2023  
- September  
2025

**Vrije Universiteit Brussel**  
**Master's degree, Computer Science (Software Languages and Software Engineering)**  
Current Grade: Greatest Distinction

September 2020  
- September  
2023

**Vrije Universiteit Brussel**  
**Bachelor's degree, Computer Science**  
Grade: Greatest Distinction

September 2014  
- September  
2020

**GO! Atheneum Emanuel Hiel**  
**Science-Mathematics (8h math/week)**  
Grade: Greatest Distinction

**PUBLICATIONS**

2025

**Security Analysis of Matter**  
**(in preparation)**

- Paper based on my internship work at COSIC.
- Preparing for submission to a top-tier security conference (name omitted in compliance with the double-blind review policy).

July 2020

**How to Become a Memory Champion?**  
**EOS Wetenschap**

EOS Wetenschap is a renowned Belgian monthly magazine that covers the latest advancements in science for a broad audience. "Arman Kolozyan is 19 years old. He graduated in Science-Mathematics from GO! Atheneum Emanuel Hiel and has always dreamed of having a fantastic memory. Can anyone become a memory champion? He researched this question and wrote an article on his findings." You can read the article [here](#) (in Dutch).

**HONORS**

March 2024

**Winner Cyber Security Challenge Belgium 2024 (qualifiers)**  
National team competition for students about cyber security. We advanced through the qualifiers, securing first place out of 286 teams. We later finished 8th in the finals. My main contributions were to

the cryptography category.  
<https://www.cybersecuritychallenge.be>

March 2023

### Finalist Cyber Security Challenge Belgium 2023

National team competition for students about cyber security. We successfully advanced through the qualifiers and secured 7th place out of 289 teams in the finals. My main contributions were to the cryptography and forensics categories.

<https://www.cybersecuritychallenge.be>

March 2022

### Pre-Finalist Cyber Security Challenge Belgium 2022

National team competition for students about cyber security. We successfully advanced through the qualifiers and secured 43rd place out of 253 teams in the pre-finals. Unfortunately, we did not progress to the finals. My main contributions were to the cryptography and forensics categories.

<https://www.cybersecuritychallenge.be>

November 2021

### Winner Vrije Universiteit Brussel (VUB) CTF 2021

Capture The Flag (CTF) is a competition in which teams solve tasks related to cyber security. This competition was organized by the Vrije Universiteit Brussel. My contribution was mainly on the cryptography category, where I successfully solved all of the crypto challenges.

<https://ctf.infogroep.be>

September 2021

### Interview in BRUZZ (Belgian magazine)

After I successfully completed my first academic year, I was interviewed in [this Belgian news article](#) about the Computer Science major and my academic achievements. I was later also invited for a radio interview.

March 2020

### Finalist Wiskunnend Wiske Wedstrijd 2020

Competition where hard mathematics questions must be solved by students in their final years of secondary school. I solved the three challenges on my own and, upon hearing that my submission qualified for the finals, gathered a team to compete in the next stage.

<https://www.vub.be/wiskunnend-wiske>

## VOLUNTEERING

September 2024  
- Present

### Infogroep

#### Corporate Relations, CTF, iLAN

Infogroep is the student association dedicated to supporting Computer Science students at the Vrije Universiteit Brussel. At Infogroep, we organize activities such as classes and seminars, competitions, a gaming tournament, a job fair, etc. Currently, I manage our corporate relations with companies such as Deloitte and PwC, assist in organizing the yearly Capture the Flag (CTF) security competition, and help organizing our annual LAN party event.

October 2022 -  
Present

### Vrije Universiteit Brussel

#### Student Representative in Study Programme Committee

Serving on the Study Programme Committee as Student Representative, actively contributing to the enhancement of academic programs and the overall student experience. Collaborating with faculty, administration, and fellow students to advocate for student needs, voice concerns, and promote positive changes within our institution.

September 2023  
- September 2024

### Infogroep

#### Corporate Relations, Lectures & Seminars

Infogroep is the student association dedicated to supporting Computer Science students at the Vrije

Universiteit Brussel. At Infogroep, we organize activities such as classes and seminars, competitions, a gaming tournament, a job fair, etc. I managed our corporate relations with companies such as Deloitte and PwC. I also organized and taught several lectures and seminars on topics such as using LaTeX (Overleaf) for academic writing.

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March 2024

## **Brussels Workshop on Real-Time Scheduling and Operating System Synergies**

### **Student Volunteer at Computer Science Workshop**

Assisted attendees in navigating the university campus.

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December 2021 -  
September 2023

## **Infogroep**

### **Job Fair Organizer**

I served as the head of the annual job fair organized by our student association. In order to make the job fair a success, I ensured extensive promotion across various academic disciplines, which involved promotion at the beginning of lectures, running paid Facebook advertisements, and more. I dedicated significant effort to attracting a diverse range of appealing companies to participate. Ultimately, the job fair proved to be a great success, with over 100 attendees, 15+ participating companies, and with more than 150 student resumes submitted.

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October 2022

## **GameForce**

### **Student Volunteer at Gaming Event**

GameForce is the largest gaming event in the Benelux. As a volunteer, I had the responsibility to stand at various (gaming) booths, attract visitors to these booths and provide the necessary assistance to the visitors.

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September 2022

## **International Conference on Managed Programming Languages & Runtimes**

### **Student Volunteer at Computer Science Conference**

I provided room support by assisting presenters in the conference room, troubleshooting technical issues, and passing the microphone for audience questions. Additionally, I offered outside support in the main hall, where I helped at the registration desk and assisted in setting up coffee breaks.