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Alexandru Ioniţă

PhD Student

Cryptography ◇ Algorithms ◇ Data Structures

Skills: C++, Python, Django, Algorithms&Data Structures, Attribute-based Encryption, Functional Encryption, Privacy Preserving Neural Networks

Education

PhD in Cryptography **November, 2020 — July 2025**
"Simion Stoilow" Institute of Mathematics of the Romanian Academy, Bucharest
Working on improving the expressiveness of **Attribute-based Encryption (ABE)** schemes.

Master's Degree, Advanced Studies in Informatics **October, 2018 — June, 2020**
"AL.I.Cuza" University of Iaşi, Faculty of Computer Science, Mark Percentage: 95.8%
Focused on research in **cryptography**.

Bachelor's Degree, Computer Science, **October, 2015 — June, 2018**
"AL.I.Cuza" University of Iaşi, Faculty of Computer Science, Mark Percentage: 96.1 %
Finished 5 out of 304 graduates

Experience

Google — Zurich, Switzerland

Software Engineering Intern June, 2022 — September 2022

- Google Lens Ranking and Filtering
- Working with Big Data for improving ranking of thumbnails.

"AL.I.Cuza" University of Iaşi — Iasi, Romania

Teaching Assistant Paid by hour: between 2020-2021 Full time: September 2021 — present

- Seminars of Graph Algorithms, Algorithm Design , Data Structures , Introduction to Programming, Algebra, Calculability, Decidability and Complexity and Competitive Programming

Research Assistant January, 2019 — August, 2020

- Research on *Searchable Encryption* and *Attribute-Based Encryption*, under the supervision of prof. dr. F.L. Ţiplea

Ambit Romania — Iasi, Romania

Software Engineer July, 2020 — December 2023

- involved in refactoring and optimization projects.
- working on an innovation project regarding invoice processing automation using OCR.

Other Projects

training.carpathink.ro, **April 2021 — June 2021**

- Competitive Programming tutoring platform - crawling data from 5 other online judges and giving useful insights about the training process
- Written in Python with **Django**

Research Assistant, Deliverable FPE **April 2021 — June 2021**

- Worked on developing and implementing a new FPE (Format Preserving Encryption) Algorithm, under a project between INFOSYS company and Politehnica University of Bucharest.

Awards

Competitive Programming

- **ICPC - International Collegiate Programming Contest**
  - **World Finals**

    Porto, Portugal, 2019 – Rank **62** (out of 135 International Teams).
    Dhaka, 2022 – Coach.
  - **SEERC - Southeastern European Regional**

    Rank 10, 3, 15, and 56 in 2019, 2018, 2016, 2015
  - **RCPC - Romanian Collegiate Programming Contest**

    Rank 1, 2, 20, 15 and 20 in 2019, 2018, 2017, 2016, 2015
- **Google HashCode** - Programming contest organised by Google, participation in teams of up to 4 persons, students and/or professionals

  2022 – Rank **14** out of more than 125 000 International Teams participated, qualified to the Google HashCode World Finals
  Ranking between 300 and 2000 in years 2016, 2017, 2018, 2019, 2020, 2021
- **KPI Open** July 2019 (Kyev, Ukraine) – 3rd Prize, 5th place
- **Catalysts Coding Contest**

  2017 – 7th place in Iasi site March, 2019 – 2nd place in Iasi site
  2018 – 1st place in Iasi site November, 2019 – 1st place in Iasi site
- **Online Competitive Programming Profiles**

  codeforces **Juve45**
  Current Rating: 2440(Grandmaster, Top 1% Globally in 2020)
  atCoder **Juve45**
  Current Rating: 2069

Selected Publications

1. Ionita, A., Banu, D.-A. & Oleniuc, I. *Heuristic Optimizations of Boolean Circuits with Application in Attribute-Based Encryption* in *Knowledge-Based and Intelligent Information & Engineering Systems: Proceedings of the 27th International Conference KES-2023, Athens, Greece, 6-8 September 2023* (eds Tsihrintzis, G. A. *et al.*) **225** (Elsevier, 2023), 3173–3182. https://doi.org/10.1016/j.procs.2023.10.311.
2. Ionita, A. *Optimizing Attribute-Based Encryption for Circuits Using Compartmented Access Structures* in *Proceedings of the 20th International Conference on Security and Cryptography, SECRYPT 2023, Rome, Italy, July 10-12, 2023* (eds di Vimercati, S. D. C. & Samarati, P.) (SCITEPRESS, 2023), 230–241. https://doi.org/10.5220/0012139000003555.
3. Tiplea, F. L., **Ionita**, **A.** & Nica, A.-M. *Practically Efficient Attribute-based Encryption for Compartmented Access Structures* in *SECRYPT 2020* (ScitePress, 2020), 201–212.