



# Adrian Coleșa

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**Work:** Baritiu str. 26-28 Bl. P1, Sc. 3, ap. 4, 400027 Cluj-Napoca (Romania)

## WORK EXPERIENCE

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### **Technical University of Cluj-Napoca – Cluj-Napoca, Romania**

City: Cluj-Napoca | Country: Romania | Website: <https://www.utcluj.ro/> | Name of unit/department: Computer Science

#### **Associate Professor**

[ 01/03/2017 – Current ]

- Teach *Operating systems* and *Operating System Design* at the BSc Program in Computer Science
- Teach *Software Security* and *Security Solution Based on Hardware and Virtualization Mechanisms* at the MSc Program in Cybersecurity
- Coordinate the *Cybersecurity Engineering* MSc program
- Do research in the field of cybersecurity, with a focus on operating system security, trusted execution environments, assess the attack exposure of individuals and institutions due to their public digital footprint

### **Bitdefender – Cluj-Napoca, Romania**

City: Cluj-Napoca | Country: Romania

#### **Senior Security Researcher**

[ 01/01/2019 – Current ]

### **Technical University of Cluj-Napoca – Cluj-Napoca, Romania**

City: Cluj-Napoca | Country: Romania

#### **Assistant Professor**

[ 2006 – 2017 ]

- Teach *Operating Systems*, *Operating System Design*, *Operating System Administration* at BSc Program in Computer Science
- Teach *Secure Coding*, *Hardware and Virtualization-based Security* at MSc Program in Cybersecurity

### **Technical University of Cluj-Napoca – Cluj-Napoca, Romania**

City: Cluj-Napoca | Country: Romania

#### **Teaching Assistant**

[ 1998 – 2006 ]

- Teach *Computer Programming*, *Data Structure and Algorithms*, *Operating Systems*, *Operating System Design* At BSc Program in Computer Science

## EDUCATION AND TRAINING

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#### **PhD**

##### **Technical University of Cluj-Napoca** [ 1998 – 2010 ]

City: Cluj-Napoca | Country: Romania | Field(s) of study: Computer Science

#### **Bachelor of Theology**

##### **Babeș-Bolyai University** [ 01/10/2002 – 01/07/2007 ]

City: Cluj-Napoca | Country: Romania | Field(s) of study: Orthodox Theology

## Master of Science

**Technical University of Cluj-Napoca** [ 01/10/1996 – 01/07/1997 ]

City: Cluj-Napoca | Country: Romania | Field(s) of study: Computer Science

## Bachelor of Science

**Technical University of Cluj-Napoca** [ 01/10/1991 – 01/07/1996 ]

City: Cluj-Napoca | Country: Romania | Field(s) of study: Computer Science

## PUBLICATIONS

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[2024]

### [Detection strategies for com, wmi, and alpc-based multi-process malware](#)

Authors: Radu Marian Portase, Andrei Marius Muntea, Andrei Mermeze, Adrian Colesa, Gheorghe Sebestyen | Journal Name: Sensors | Volume, Issue and Pages: 24(16) | Publisher: MDPI

[2024]

### [Specrep: Adversary emulation based on attack objective specification in heterogeneous infrastructures](#)

Authors: Radu Marian Portase, Adrian Colesa, and Gheorghe Sebestyen | Journal Name: Sensors | Volume, Issue and Pages: 24(17):5601 | Publisher: MDPI

[2024]

### [Leda—layered event-based malware detection architecture](#)

Authors: Radu Marian Portase, Raluca Laura Portase, Adrian Colesa, and Gheorghe Sebestyen | Journal Name: Sensors | Volume, Issue and Pages: 24(19):6393 | Publisher: MDPI

[2024]

### [A Path Sensitive and Scalable Approach for Mapping the Capabilities Required for Linux Kernel Defined System Calls Using Static Analysis Techniques](#)

Authors: Răzvan-Mihai Bolundut, Adrian-Viorel Coleșa, Radu-Marian Portase | Journal Name: IEEE 20th International Conference on Intelligent Computer Communication and Processing (ICCP) | Publisher: IEEE

[2024]

### [CodeFlowGen: A Generator of Synthetic Source Code with Scalable Control Flow Paths for Evaluating Static Analysis Tools](#)

Authors: Răzvan-Mihai Bolunduț, Adrian-Viorel Coleșa, Radu-Marian Portase | Journal Name: International Conference on Information Technology and Communications Security | Volume, Issue and Pages: 70-83 | Publisher: Springer Nature Switzerland

[2024]

### [Enhancing ML Model Resilience to Time-Evolving Data in Malware Detection Systems with Adversarial Learning](#)

Authors: Marian Șandor, Radu Marian Portase, Adrian Colesa | Journal Name: IEEE 20th International Conference on Intelligent Computer Communication and Processing (ICCP) | Publisher: IEEE

[2024]

### [CANComa: Shutdown Attack on Automotive Control Units over Controller Area Network](#)

Authors: Balázs Benedek, Adrian Coleșa | Journal Name: IEEE International Conference on Cognitive Mobility | Volume, Issue and Pages: 361-373 | Publisher: Springer Nature Switzerland

[2024]

### [PwnMaster: Automatic Buffer Overflow and Format String Vulnerability Detection and Exploitation](#)

Authors: Florin Petrean, Adrian Coleșa | Journal Name: IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR) | Publisher: IEEE

[2024]

## **From Weapon to Target: Quantum Computers Paradox**

Authors: Adrian Coleșa, Sorin Boloș | Journal Name: BlackHat USA

Link: <https://www.youtube.com/watch?v=11W7ookIX7I>

[2023]

## **Efficient Multi-Stage Detection of Malicious Windows Executable During Execution**

Authors: Radu-Marian Portase, Adrian Coleșa, Gheorghe Sebestyen | Journal Name: IEEE 19th International Conference on Intelligent Computer Communication and Processing (ICCP) | Volume, Issue and Pages: 211-218 | Publisher: IEEE

[2023]

## **Ember feature dataset analysis for malware detection**

Authors: Marian Șandor, Radu Marian Portase, Adrian Coleșa | Journal Name: IEEE 19th International Conference on Intelligent Computer Communication and Processing (ICCP) | Publisher: IEEE

[2021]

## **Infrastructure for Capturing and Persisting Virtualization-Specific Events Triggered by In-Guest Process Executions for Behavioral-Based Analysis**

Authors: Robert Váradi, Adrian Coleșa, Gabriel Raț | Journal Name: 20th RoEduNet Conference: Networking in Education and Research (RoEduNet) | Publisher: IEEE

[2021]

## **VE-VMI: high-performance virtual machine introspection based on virtualization exception**

Authors: Andrei Luțăș, Gheorghe Sebestyen, Raul Toșa, Adrian Coleșa | Journal Name: 20th International Symposium on Parallel and Distributed Computing (ISPDC) | Publisher: IEEE

[2021]

## **Curator-a system for creating data sets for behavioral malware detection**

Authors: Radu-Marian Portase, Adrian Coleșa | Journal Name: 20th International Symposium on Parallel and Distributed Computing (ISPDC) | Volume, Issue and Pages: 57-64 | Publisher: IEEE

[2020]

## **Following the pebble trail: Extending return-oriented programming to risc-v**

Authors: Bogdan Pavel Deac, Adrian Colesa | Journal Name: Proceedings of the 2020 ACM SIGSAC Conference on Cloud Computing Security Workshop | Volume, Issue and Pages: 161-161 | Publisher: ACM

[2020]

## **COSTS AND BENEFITS OF ADAPTIVE TESTING IN ASSESSMENT OF RANDOM NUMBER SEQUENCES**

Authors: Kinga Marton, Laurentiu Lazar, Adrian Colesa, Alin Suciu | Journal Name: PROCEEDINGS OF THE ROMANIAN ACADEMY - MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE | Volume, Issue and Pages: 21(1), 37-44 | Publisher: ROMANIAN ACADEMY

[2015]

## **Strongly isolated malware scanning using secure virtual containers**

Authors: Sandor Lukacs, Dan H Lutas, Adrian V Colesa | Journal Name: US Patent | Volume, Issue and Pages: 9117081

[2017]

## **Enabling a secure environment through operating system switching**

Authors: Sandor Lukacs, Radu I CIOCAS, Vlad I Topan, Adrian V COLESA, Raul V Tosa | Journal Name: US Patent | Volume, Issue and Pages: 9563457

[2016]

## **Below-OS security solution for distributed network endpoints**

Authors: Sandor Lukacs, Adrian V COLESA | Journal Name: US Patent | Volume, Issue and Pages: 9319380

[2016]

### **Systems And Methods Of Transaction Authorization Using Server-Triggered Switching To An Integrity-Attested Virtual Machine**

Authors: Adrian V COLESA, Sandor Lukacs | Journal Name: US Patent Application | Volume, Issue and Pages: 14558922

[2015]

### **Systems and Methods for Mutual Integrity Attestation Between A Network Endpoint And A Network Appliance**

Authors: Sandor Lukacs, Adrian V COLESA, Dan H Lutas | Journal Name: US Patent Application | Volume, Issue and Pages: 14244505

[2016]

### **Bare-metal computer security appliance**

Authors: Sandor Lukacs, Adrian V COLESA | Journal Name: US Patent | Volume, Issue and Pages: 9383934

[2008]

### **Software random number generation based on race conditions**

Authors: Adrian Colesa, Radu Tudoran, Sebastian Banescu | Journal Name: 10th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing | Volume, Issue and Pages: 439-444 | Publisher: IEEE

[2015]

### **U-HIPE: hypervisor-based protection of user-mode processes in Windows**

Authors: Andrei Lutaş, Adrian Coleşă, Sándor Lukács, Dan Lutaş | Journal Name: Journal of Computer Virology and Hacking Techniques | Publisher: Springerlink

[2019]

### **Router-based IoT Security using Raspberry Pi**

Authors: Lilla Nagy, Adrian Colesa | Journal Name: 18th RoEduNet Conference: Networking in Education and Research (RoEduNet) | Publisher: IEEE

[2018]

### **Malware clustering based on called api during runtime**

Authors: Gergő János Széles, Adrian Coleşă | Journal Name: International Workshop on Information and Operational Technology Security Systems | Volume, Issue and Pages: 110-121 | Publisher: Springer International Publishing

[2018]

### **File System Minifilter Based Data Leakage Prevention System**

Authors: Adrian Buda, Adrian Coleşă | Journal Name: 17th RoEduNet Conference: Networking in Education and Research (RoEduNet) | Publisher: IEEE

[2006]

### **Providing high data availability in mediagrid**

Authors: Adrian Colesa, Iosif Ignat, Radu Opris | Journal Name: Eighth International Symposium on Symbolic and Numeric Algorithms for Scientific Computing | Volume, Issue and Pages: 296-302 | Publisher: IEEE

[2018]

### **False positive mitigation in behavioral malware detection using deep learning**

Authors: Alexru Mihai Lungana-Niculescu, Adrian Colesa, Ciprian Oprisa | Journal Name: IEEE 14th International Conference on Intelligent Computer Communication and Processing (ICCP) | Volume, Issue and Pages: 197-203 | Publisher: IEEE

[2016]

## **Systems and methods for batch processing of samples using a bare-metal computer security appliance**

**Authors:** Sandor Lukacs, Adrian V COLESA | **Journal Name:** US Patent | **Volume, Issue and Pages:** 9507939

[2013]

## **Automatic code features extraction using bio-inspired algorithms**

**Authors:** Ciprian Oprișa, George Cabău, Adrian Coleșa | **Journal Name:** Journal of Computer Virology and Hacking Techniques | **Volume, Issue and Pages:** 1-12 | **Publisher:** Springerlink

## **PROJECTS**

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[ 01/10/2024 – 30/09/2026 ]

### **Cybersecurity Seminars**

- Financial Support: Google.org, Grant 2024-348638
- Project Scope: Developing students' technical skills in the field of cybersecurity and raising cybersecurity awareness in the local community.
- Position: Director
- Principal responsibility: Supervise all project activities. Participate in teaching material preparation and teach classes on Infomration Security, OS Security and Software Security. Work with students and keep in touch with local community organizations.
- Organization: Technical University of Cluj-Napoca

[ 03/2021 – 05/2021 ]

### **Visiting Fulbright Scholarship**

- Goal: Develop new master programs in cybsersecurity
- Subject: Meetings with academic and industry leadership and professionals in USA to learn about their master programs and industry requirements in the cybsersecurity field
- URL: <https://fulbright.edu.pl/cybersecurity-study-visits/>
- Organization: Fullbright Polonia

[ 06/2020 – 12/2022 ]

### **GEIGER Cybersecurity Counter**

- Financial support: UE, H2020-SU-DS03, Grant 883588/2020
- Position: Research member
- Principal responsibility: Develop courses for different levels of cybersecurity certifications for SME
- Organization: Cluj-IT Cluster, Romania

[ 01/10/2017 – 30/09/2018 ]

### **STARG-VM: Server Triggered Protection of Client Applications by Running Their Security-Sensitive Phases in a Trusted VM**

- Financial support: Grant 230PED/2017, PN-III-P2-2.1-PED-2016-2073 from UEFISCDI, Romanian Ministry of Education and Scientific Research
- Position: Director
- Principal subjects: Bring an Experimental Virtualization-Based Security Product to Technology Readiness Level 4
- Organization: Technical University of Cluj-Napoca (TUCN)

[ 05/2013 – 12/2018 ]

### **Evaluation of the state-of-the-art and implementation of a demo software regarding the field of information security on MS Windows operating systems using security methods based on Intel hardware virtualization support**

- Financial support: Bitdefender
- Position: Director
- Principal responsibilities: Research of the main directions regarding information security methods based on virtualization
- Organization: Technical University of Cluj-Napoca (TUCN)

[ 11/2014 – 10/2015 ]

### **Feasibility study and design of a software subsystem for providing high-availability for Cloud software services**

- Financial support: Innovative project POSCCE/SMIS 49752
- Position: Subproject coordinator at TUCN
- Principal subjects: Design of a software strategy and system for providing high-availability of services in Cloud using virtual machine replication
- Organization: Technical University of Cluj-Napoca (TUCN)

[ 2010 – 2013 ]

### **Initiative for Globus in Europe (IGE)**

- Financial support: Grant 261560/2010 Seventh Framework Programme (FP7)
- Position: Research member
- Principal subjects: Globus infrastructure support, test and maintenance of Globus configurations and applications
- Organization: Technical University of Cluj-Napoca (TUCN)

[ 2006 – 2007 ]

### **Innovative Strategies for Fast and Flexibly Data Organization and Searching in File Systems**

- Financial support: Grant 24/2007 from Romanian Ministry of Research and Education
- Position: Research member
- Principal subjects: Support for user attributes of files, new concepts for data organization in file systems, integration of the new concepts with existing applications
- Organization: Technical University of Cluj-Napoca (TUCN)

[ 2005 – 2008 ]

### **MEDIOGRID: Parallel and distributed graphical computation over GRID of geographical and environmental data**

- Financial support: Grant 19CEEX-I03/2005 from Romanian Ministry of Research and Education
- Position: Research member
- Principal subjects: Distribution of huge volumes of data over Grid
- Organization: Technical University of Cluj-Napoca (TUCN)

## **CERTIFICATIONS**

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[ Offensive Security, 12/2014 ]

### **Offensive Security Certified Professional (OSCP)**

**Mode of learning:** Online

## LANGUAGE SKILLS

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**Mother tongue(s):** Romanian

**Other language(s):**

**English**

**LISTENING B2 READING C1 WRITING C1**

**SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1**

**German**

**LISTENING A2 READING A2 WRITING A2**

**SPOKEN PRODUCTION A1 SPOKEN INTERACTION A2**

*Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user*