

Curriculum Vitae



Personal Information

Name/Surname **Emanuel Onica**
E-mail emanuel.onica@uaic.ro
Nationality Romanian
Birth Date November 12, 1982

Education and Training

Date 2010 – 2014
Specialization Title PhD in Computer Science
Thesis Title “Efficient Support for Privacy Preserving Publish/Subscribe Systems”
Institution Institute of Informatics, University of Neuchâtel, Switzerland

Date 2007 – 2009
Specialization Masters in Distributed Systems
Specialization Title MSc in Computer Science (Distributed Systems specialization)
Thesis Title “Securing the Media Stream Inside VoIP SIP Based Sessions”
Institution Faculty of Computer Science – Alexandru Ioan Cuza University of Iași, Romania

Date 2002 – 2006
Specialization Bachelor in Computer Science
Specialization Title BSc in Computer Science
Thesis Title “The Application of the H.323 Specifications in VoIP”
Institution Faculty of Computer Science – Alexandru Ioan Cuza University of Iași, Romania

Date 1998 – 2002
Specialization High school – Computer science specialization
Specialization Title Certified technician: programmer/IT operator
Institution National College “Mihail Sadoveanu”, Iași, Romania

Date 2000 – 2002
Training CISCO CCNA – modules 1-4
Institution National College “Mihail Sadoveanu”, Iași, Romania

Work Experience

Date 2008 - Present (activity suspended between 2010-2014 for doctoral studies)
Current Position Associate Professor (since 2020)
Employer Faculty of Computer Science – Alexandru Ioan Cuza University of Iași, Romania

Main activities and responsibilities

Didactical activity:

- Blockchain: Foundation and Applications – course and practical works (labs) (2019-2025)
- Event Based Systems – course and practical works (labs) (2016-2025)
- Multiprocessor Programming Techniques – course and practical works (labs) (2021-2025)
- Security of Computer Networks – practical works (labs) (2010, 2015-2025)
- Computer Networks – practical works (labs) (2008-2010, 2014-2021)
- Information Security – practical works (labs) (2014-2021)
- Object Oriented Programming – practical works (labs) (2015)

Research activity:

Projects:

- SCEAL – Smart Contracts made Efficient, Accessible and Legitimate (started 2025)
- EBSIS — Event Based Systems in Iași – Proiect Twinning in Program Orizont 2020, Coordonator de proiect (2016-2018)
- EBSIS+ - Award project for additional research in the context of EBSIS project – PNCDI III national funding, Project coordinator (2016-2018)

Publications:

- "Where Should I Deploy My Contracts? A Practical Experience Report" (C. Lazăr, G. Secieru, E. Onica) - The 5th International Workshop on Distributed Infrastructure for Common Good in conjunction with IEEE ICDCS 2025 conference, DICG 2025
- "Towards Stream-Based Monitoring for EVM Networks" (E. Onica, C.N. Bărbieru, A. Arusoaie, O.O. Captarencu, C. Amariei) – The 19th ACM Intl. Conference on Distributed and Event-Based Systems, DEBS 2025
- "Blazing through Hard Drive Telemetry Data Streams with Parallel Processing" (I.I. Sârbu, E. Onica, C. Amariei) - The 18th ACM Intl. Conference on Distributed and Event-Based Systems, DEBS 2024 (*DEBS Grand Challenge Performance Award*)
- "Can Smart Contracts Become Smart? An Overview of Transaction Impact on Ethereum DApp Engineering" (E. Onica, M. Georgică) - The 4th Intl. Workshop on Distributed Infrastructure for Common Good, in conjunction with ACM/IFIP Middleware 2023 Conference, DICG 2023
- "Using SGX for Meta-Transactions Support in Ethereum DApps" (E. Onica, C. Amariei) - The 22nd IFIP International Conference on Distributed Applications and Interoperable Systems, DAIS 2022
- "Malware in the SGX supply chain: Be careful when signing enclaves!" (V. Crăciun, P. Felber, A. Mogage, E. Onica, R. Pires) – IEEE Trans. on Dependable and Secure Computing, 19 (2), 2022
- "Towards Efficient Hashing in Ethereum Smart Contracts" (E. Onica, C.I. Schifirnet) - The 16th International Conference on Software Technologies, ICSOFT 2021
- "Fair and Efficient Gossip in Hyperledger Fabric" (N. Berendea, H. Mercier, E. Onica, E. Rivière) - The 40th IEEE International Conference on Distributed Computing Systems, ICDCS 2020
- "Supply chain malware targets SGX: Take care of what you sign." (A. Mogage, R. Pires, V. Crăciun, P. Felber, E. Onica), 38th IEEE International Symposium on Reliable Distributed Systems, SRDS 2019
- "From Confidential kNN Queries to Confidential Content Based Publish/Subscribe" (E. Onica, H. Mercier, E. Rivière), The 14th Intl. Conf. on Software Technologies, ICSOFT 2019 (*Best Position Award*)
- "Towards Integrated Failure Recovery for Web Service Composition" (P. Diac, E. Onica), The 14th International Conference on Software Technologies, ICSOFT 2019
- "Trust and Privacy in Development of Publish/Subscribe Systems" (E. Onica, H. Mercier, E. Rivière), The 28th International Conference on Information Systems Development, ISD 2019
- "Cell Grid Architecture for Maritime Route Prediction on AIS Data Streams" (C. Amariei, P. Diac, E. Onica, V. Roșca), The 12th ACM International Conference on Distributed and Event Based Systems, DEBS 2018 (*DEBS Grand Challenge Performance Award 2018*)
- "Predicting Destinations by Nearest Neighbor Search on Training Vessel Routes" (V. Roșca, E. Onica, P. Diac, C. Amariei), The 12th ACM Intl. Conf. on Distributed and Event Based Systems, DEBS 2018
- "Reliable Messaging to Millions of Users with MigratoryData" (M. Rotaru, F. Olariu, E. Onica, E. Rivière) - The 18th Annual ACM/IFIP/USENIX Middleware Conference, Middleware 2017
- "Optimized Stage Processing for Anomaly Detection on Numerical Data Streams: Grand Challenge" (C. Amariei, P. Diac, E. Onica), The 11th ACM International Conference on Distributed and Event-based Systems, (*DEBS Grand Challenge Performance Award 2017*)
- "A Lightweight MapReduce Framework for Secure Processing with SGX" (R. Pires, D. Gavril, P. Felber, E. Onica, M. Pasin), 17th IEEE/ACM Intl. Symp. on Cluster, Cloud and Grid Computing, CCGRID 2017
- "Efficient and Confidentiality-Preserving Content-Based Publish/Subscribe with Prefiltering" (R. Barazzutti, E. Onica, P. Felber, H. Mercier, E. Rivière), IEEE Transactions on Dependable and Secure Computing, Vol. 14, Issue 3, 2017

- "Confidentiality-Preserving Publish/Subscribe: A Survey" (E. Onica, P. Felber, H. Mercier, E. Rivière), ACM Computing Surveys (CSUR), Vol. 49, Issue 2, 2016
- "Towards Scalable and Dependable Privacy-Preserving Publish/Subscribe Services" (E. Onica, P. Felber, H. Mercier, E. Rivière) - The 46th Annual IEEE/IFIP International Conference on Dependable Systems and Networks, DSN 2016
- "Efficient Key Updates through Subscription Re-encryption for Privacy-Preserving Publish/Subscribe" (E. Onica, P. Felber, H. Mercier, E. Rivière) - The 16th ACM/IFIP/USENIX Middleware Conference, Middleware 2015
- "Enhancing Yahoo! Search Results using Linked Open Data" (C. Amariei, E. Onica, S. Buraga) Knowledge Engineering: Principles and Techniques Conference 2nd Edition, KEPT 2009

Member in scientific committees and organization of scientific events:

- The 29th International Conference on Principles of Distributed Systems - OPODIS 2025 (general chair)
- The 26th ACM/IFIP International Middleware Conference – Middleware 2025 (PC member)
- The 25th ACM/IFIP International Middleware Conference – Middleware 2024 (PC member)
- The 17th ACM International Conference on Distributed and Event-Based Systems - DEBS 2023 (PC member)
- The 23rd IFIP International Conference on Distributed Applications and Interoperable Systems - DAIS 2023, part of DisCoTec 2023 (PC member)
- The 22nd IFIP International Conference on Distributed Applications and Interoperable Systems - DAIS 2022, part of DisCoTec 2022 (PC member)
- The 21st IFIP International Conference on Distributed Applications and Interoperable Systems - DAIS 2021, part of DisCoTec 2021 (PC member)
- The 20th IFIP International Conference on Distributed Applications and Interoperable Systems - DAIS 2020, part of DisCoTec 2020 (PC member)
- The 19th IFIP International Conference on Distributed Applications and Interoperable Systems - DAIS 2019, part of DisCoTec 2019 (PC member)
- The 15th European Dependable Computing Conference - EDCC 2019 (PC member)
- The 14th European Dependable Computing Conference - EDCC 2018 (general chair)
- EBSIS Summer School 2018 (organizer)
- The 18th IFIP International Conference on Distributed Applications and Interoperable Systems - DAIS 2018, în cadrul DisCoTec 2018 (PC member)
- The 21st International Conference on Principles of Distributed Systems - OPODIS 2017 (PC member)
- EBSIS Summer School 2017 (organizer)
- Dependability and Interoperability with Event-Based Systems - DIEBS 2017, special session within DisCoTec 2017 (organizer)
- Workshop on Mobility and Cloud Security and Privacy în cadrul SRDS 2016 (PC member)
- EBSIS Summer School 2016 (organizer)

Invited Talks:

- "Using SGX to Tackle Security Issues in Ethereum Meta-Transaction", keynote în cadrul BlockTEE workshop, DisCoTec 2022 conference, Lucca, Italia, June 17, 2022
- "Twinning: EBSIS - Event Based Systems in Iași", prezentare dată în cadrul NCP_WIDE.NET Infoday, un eveniment asociat conferinței WireX 2019, Academia Română, Iași, June 26, 2019

Employer Activity Area

Education and Research

Date

2010-2014

Position

Scientific Collaborator, PhD Assistant

Employer

Institute of Informatics
University of Neuchâtel, Switzerland

Main activities and responsibilities

Research activity:

Projects:

- SRT-15 – FP7 project (site: <http://srt-15.unine.ch/>), Permanent member of the project team
- LEADS – FP7 project (site: <http://leads-project.unine.ch/>), Periodical collaboration

Publications:

- "Elastic Scaling of a High-Throughput Content-Based Publish/Subscribe Engine" (T. Heinze, A. Martin, M. Pasin, R. Barazzutti, P. Felber, Z. Jerzak, C. Fetzer, E. Onica, E. Rivière) The 34th IEEE International Conference on Distributed Computing Systems, ICDCS 2014
- "Performance/Security Tradeoffs for Content-Based Routing Supported by Bloom Filters" (H. Mercier, E. Onica, E. Rivière, P. Felber), The 20th International Colloquium on Structural Information and Communication Complexity, SIROCCO 2013
- "StreamHub: a Massively Parallel Architecture for High-Performance Content-Based Publish/Subscribe" (R. Barazzutti, P. Felber, C. Fetzer, E. Onica, J.F. Pineau, M. Pasin, E. Rivière, S. Weigert), The 7th ACM International Conference on Distributed Event-Based Systems, DEBS 2013 (*DEBS 2013 Best Paper Award*)
- "Thrifty Privacy: Efficient Support for Privacy-Preserving Publish/Subscribe" (R. Barazzutti, P. Felber, H. Mercier, E. Onica, E. Rivière), The 6th ACM International Conference on Distributed Event-Based Systems, DEBS 2012
- "Infrastructure Provisioning for Scalable Content-Based Routing: Framework and Analysis" (R. Barazzutti, P. Felber, H. Mercier, E. Onica, J.F. Pineau, E. Rivière, C. Fetzer), The 11th Annual IEEE International Symposium on Network Computing and Applications, NCA 2012

Invited Talks:

- "Efficient Support for Confidentiality-Preserving Publish/Subscribe Systems", prezentare dată în cadrul Distributed Systems Research Group, Department of Computer and Information Science, University of Konstanz, September 8, 2014
- "The GSoC Experience", prezentată dată în cadrul Google Summer of Code meet-up event, Institute of Informatics, University of Neuchâtel, February 27, 2014

Didactical activity:

- Concurrency in programming – practical works (labs) (2011-2014)

Employer Activity Area

Education and Research

Date

2008

Position

Software Developer

Employer

SIP Communicator (currently Jitsi) through Google Summer of Code programme

Main activities and responsibilities

Integration of key exchange support in a secure VoIP solution (technologies: Java, OSGi, Apache Felix, JAIN SIP, BouncyCastle)

Employer activity area

Communication and media software R&D

Date

2003 - 2008

Position

IT Operator (part time)

Employer

SC Azzurro Sign SRL, Iași, România

Main activities and responsibilities

Service, maintenance and administration of technical equipment

Employer activity area

Advertising and graphical design

Personal skills

Software development skills

Programming languages :

- C/C++, Java, Solidity (high experience level)
- JavaScript (medium experience level)
- Go, Python (basic knowledge)

Experience with a variety of libraries and APIs (Web3.js, Apache Storm, Apache Kafka, Intel SGX API, Zookeeper API, Boost, Google Protocol Buffers, Thrift, various cryptographic libraries, etc)

Knowledge of various protocols and technologies:
Ethereum Blockchain Environment, Smart Contracts, Solidity, Hyperledger Fabric
The generic TCP/IP stack: TCP, UDP, IP
Security protocols: - SSL/TLS, IPSec, SSH
VoIP: - SIP, RTP, RTCP, ZRTP (basic knowledge)

Databases: SQL
Web development (basic knowledge): HTML, XML

Other technical skills Operating systems experience: Windows, Linux
Knowledge of PC and network hardware components

Experience with a variety of software packages for editing and presentation: LateX, GnuPlot, draw.io, yEd, MS Office (Word, Excel, PowerPoint), etc

Mother tongue Romanian

Foreign languages English – advanced (understanding C1, speaking and writing C1)
German – basic knowledge (understanding A2, speaking and writing A1)
French – basic knowledge (understanding A2, speaking and writing A1)