
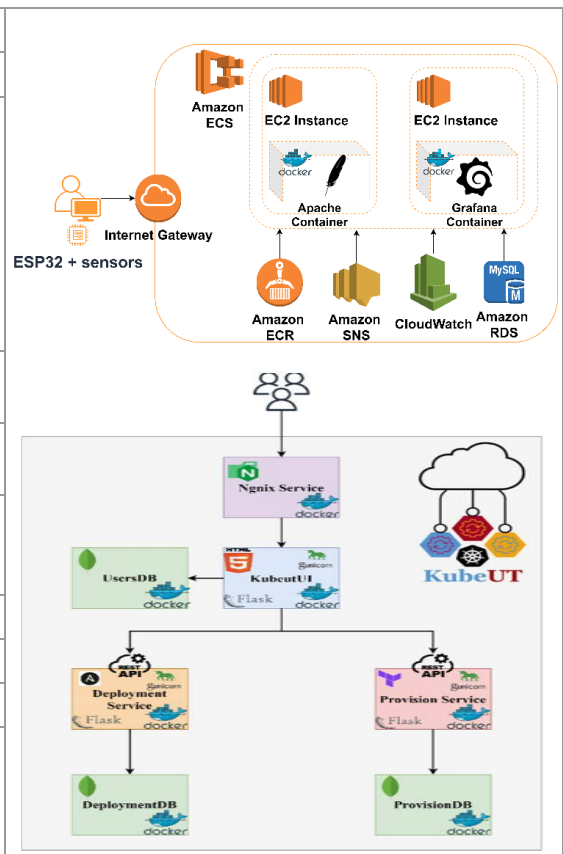


UNIFIED COMMUNICATIONS IN CLOUD

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Areas of expertise

Telecommunications Networks

Switching and routing; Computer networks; Internet protocols; Unified Communications in Cloud; Software-defined networking; Network security; Cyber-security; Quality of Service in Next-Generation Networks; IoT platforms; DevNet.

Team

Prof. Virgil Dobrota, Ph.D.; Assoc. Prof. Daniel Zinca, Ph.D.; Assist. Prof. Tudor-Mihai Blaga, Ph.D., Assist. Prof. Andrei-Bogdan Rus, Ph.D., Assist. Prof. Iustin-Alexandru Ivanciu, Ph.D.; Assist. Robert Botez, Ph.D. student; Gabriel Lazar, Ph.D. student, Calin-Marian Iurian, Ph.D. student; Gheorghe-Romeo Andreica, Ph.D. student; Diana Deac, Ph.D. student; Dan-Andrei Margin, Ph.D. student; Catalin-Marian Petrutu, Ph.D. student.

Representative projects

EU+ " European University of Technology", <https://www.univ-tech.eu/> (2020-2022)
CLOUDUT "Cloud Cercetare UTCN", Contract No. 235/21.04.2020, POC, MySMIS ID:124493, <https://cloudut.utcluj.ro/en/> (2020-2022)
URBIVEL "Advanced Technologies for Intelligent Urban Electric Vehicles", ID P_40_333 project, POC-A1-A1.2.3, <https://urbivel.utcluj.ro/> (2016-2020)
DIONASYS "Declarative and Interoperable Overlay Networks, Applications to Systems of Systems", CHIST-ERA project, <https://www.dionasys.eu/> (2015-2018)
UCONNECT " Implementation of Ubiquitous Connectivity for Public Transport", FP7-SME-2012-1/315161 project, <https://cordis.europa.eu/project/rcn/105670/factsheet/en> (2012-2014)
4WARD "Architecture and Design for the Future Internet", FP7-ICT-2007-1 No. 216041 project, <https://cordis.europa.eu/project/rcn/85316/factsheet/en> (2008-2010)

Significant results

The most representative publications of the past 5 years:

1. R. Botez, A.T. Sferle, I.A. Ivanciu and V. Dobrota, "Work-in-Progress: KubeUT: A Cloud-Agnostic Kubernetes Management Platform", Proceedings of the 11th International Black Sea Conference on Communications and Networking BlackSeaCom 2023, Istanbul, Turkiye, 2023, pp. 384-389, doi: 10.1109/BlackSeaCom58138.2023.10299745.
2. A.T. Costin, D. Zinca, and V. Dobrota, "A Real-Time Streaming System for Customized Network Traffic Capture", Sensors 2023, 23(14), 6467; <https://doi.org/10.3390/s23146467>, WOS:001036373600001 (ISI Q2 Journal).

3. R. Botez, A.G. Pasca, A.T. Sferle, I.A. Ivanciu, and V. Dobrota, "Efficient Network Slicing with SDN and Heuristic Algorithm for Low Latency Services in 5G/B5G Networks", *Sensors* 2023, 23(13), 6053; <https://doi.org/10.3390/s23136053> WOS:001030144200001 (ISI Q2 Journal).
4. A.G. Mari, D. Zinca, and V. Dobrota, "Development of a Machine-Learning Intrusion Detection System and Testing of Its Performance Using a Generative Adversarial Networks", *Sensors* 2023, 23(3), 1315; <https://doi.org/10.3390/s23031315>, WOS:000930773600001 (ISI Q2 Journal).
5. D. Deac, E. Teshome, R Van Glabbeek, V. Dobrota, A. Braeken, K. Steenhaut, "Traffic Aware Scheduler for Time-Slotted Channel-Hopping-Based IPv6 Wireless Sensor Networks", *Sensors* 2022, 22(17), 6397; <https://doi.org/10.3390/s22176397>, WOS:000851975400001 (ISI Q2 Journal).
6. D.A. Margin, I.A. Ivanciu and V. Dobrota, "Deep Reservoir Computing Using Echo State Networks and Liquid State Machine", *Proc. of the 10th Intl. Black Sea Conf. on Communications and Networking BlackSeaCom 2022*, Sofia, June 6-9, 2022, pp. 208-213, doi: 10.1109/BlackSeaCom54372.2022.9858322, WOS:000865848800036.
7. A.F. Sicoe, R. Botez, I.A. Ivanciu and V. Dobrota, "Fully Automated Testbed of Cisco Virtual Routers in Cloud Based Environments", *Proc. of 10th Intl. Conf. BlackSeaCom 2022*, Sofia, June 6-9,2022, pp.49-53, doi: 10.1109/BlackSeaCom54372.2022.9858288, WOS:000865848800009.
8. A.T. Costin, D. Zinca and V. Dobrota, "LAN traffic capture applications using the libtins library", *Electronics* 2021, ISSN: 2079-9292, Special Issue: "Real-Time Systems, Cyber-Physical Systems and Applications", *Electronics* 2021, 10(24), 3084; <https://doi.org/10.3390/electronics10243084>, WOS:000742426500001 (ISI Q3 Journal).
9. R. Botez, J. Costa-Requena, I.A. Ivanciu, V. Strautiu, V. Dobrota, "SDN-based Network Slicing Mechanism for a Scalable 4G/5G Core Network: A Kubernetes Approach", *Sensors* 2021, 21(11), 3773; <https://doi.org/10.3390/s21113773>, ISSN: 1424-8220, WOS:000660676800001 (ISI Q1 Journal).
10. R. Botez, I.A. Ivanciu, C.M. Iurian, V. Dobrota, "Quantum Implementation of the Modified Dijkstra's Routing Algorithm", *Proceedings of the Romanian Academy - Series A*, ISSN 1454-9069, Vol. 22, No. 41, January - March 2021, pp. 91-98, Romanian Academy Publishing House, WOS:000635594600011 (ISI Q2 Journal).
11. E. Teshome, D. Deac, S. Thielemans, M. Carlier, K. Steenhaut, A. Braeken, V. Dobrota, "Time Slotted Channel Hopping and ContikiMAC for IPv6 Multicast Enabled Wireless Sensor Networks", *Sensors* 2021, 21(5), 1771; <https://doi.org/10.3390/s21051771>, ISSN: 1424-8220, WOS:000628863900001 (ISI Q1 Journal).
12. A. Cepuc, R. Botez, O. Craciun, I.A. Ivanciu, V. Dobrota, "Implementation of a Continuous Integration and Deployment Pipeline for Containerized Applications in Amazon Web Services Using Jenkins, Ansible and Kubernetes", *Proc. of the 19th RoEduNet Conference: Networking in Education and Research*, PUB Bucharest, Romania, Dec.11-12, 2020, pp.1-6, DOI: 10.1109/RoEduNet51892.2020.9324857, WOS:000654265900011.
13. C.M. Iurian, I.A. Ivanciu, B.M. Marian, D. Zinca, V. Dobrota, "An SDN Architecture for IoT Networks Using ONOS Controller", *Proc. of the 19th RoEduNet Conference: Networking in Education and Research*, PUB Bucharest, Romania, Dec.11-12, 2020, pp. 1-6, DOI: 10.1109/RoEduNet51892.2020.9324887, WOS:000654265900035.
14. M. Csoma, B. Kone, R. Botez, I.A. Ivanciu, A.D. Kora, V. Dobrota, "Management and Orchestration for Network Function Virtualization: An Open Source MANO Approach", *Proc. of the 19th RoEduNet Conference: Networking in Education and Research*, PUB Bucharest, Romania, Dec.11-12, 2020, pp. 1-6, DOI: 10.1109/RoEduNet51892.2020.9324847, WOS:000654265900002.
15. G.R. Andreica, L. Bozga, D. Zinca, and V. Dobrota, "Denial of Service and Man-in-the-Middle Attacks against IoT Devices in a GPS-based Monitoring Software for Intelligent Transportation Systems", *Proc. of the 19th RoEduNet Conference: Networking in Education and Research*, PUB Bucharest, Romania, Dec.11-12, 2020, pp. 1-4, DOI: 10.1109/RoEduNet51892.2020.9324865, WOS:000654265900017.
16. I.A. Ivanciu, L. Ivanciu, D. Zinca and V. Dobrota, "Securing Health-Related Data Transmission Using ECG and Named Data Networks", *Proceedings of the 25th IEEE Intl. Symp. on Local and Metropolitan Area Networks LANMAN 2019*, Paris, France, July 1-3, 2019, DOI: 10.1109/LANMAN.2019.8846993, WOS:000617951400007.

Significant solutions: SDN-based Network Slicing Mechanism for a Scalable 4G/5G Core Network; Machine-Learning Intrusion Detection System using Generative Adversarial Networks; Quantum computing implementation of Modified Dijkstra's Algorithm; Seamless Connectivity for Intra/ Inter-Cloud Applications; Automatic Deployment of Infrastructure and Services for a Private Cloud Orchestrated by OpenStack; Active Measurements of the One-Way Delay.

The offer addressed to the economic environment.

Research & development	SDN and NFV implementations based on Kubernetes; P4-Based Programmable Networks; Development of cross-layer techniques for congestion control; Development of a solution for permanent Internet connection independent to the network access technologies; Development of implementation for automatic management in cloud; Extension of libtins library for a packet-based VoIP analyser and an Intrusion Detection System.
Consulting	Consulting, design, research, and prototyping towards development of private cloud solutions; Evaluation of security vulnerabilities in computer networks and operating systems; IP-based solution for unified communications; DevNet solutions.
Training	Cisco Networking Academy programs offered by UC Labs staff: https://el.el.obs.utcluj.ro/cisco/ CCNA: Introduction to Networks (IN), version 7.02; CCNA: Routing, Switching and Wireless Essentials (RSWE), version 7.02; CCNA: Enterprise Networking, Security and Automation (ENSA), version 7.02; IoT Fundamentals: IoT Security, version 1.1; CyberOps Associate, version 1.02; CCNA Security version 2.02; DevNet Associate, version 1.01;