CURRICULUM VITAE

Personal information

Name, Surname:	Tudor Cioara		
Date of birth:	24/08/1982	Sex:	M
Nationality:	Romanian		
Researcher unique identifier(s) (ORCID, Researcher ID etc.):	Scopus Author ID: https://www.scopus.com/authid/detail.uri?authorId=24473952700 ORCID: https://orcid.org/0000-0003-1177-5795 Scholar: https://scholar.google.ro/citations?user=nWTSIBwAAAAJ&hl=ro Brainmap: https://www.brainmap.ro/tudor-cioara		
URL for personal website:	https://dsrl.eu/tcioara/		
Awards	**2020 Romanian Academy Award "Constantin Budeanu" for the contributions brought in "Intelligent solutions for energy ecosystems"**		

Job Positions - current and previous

Year	Job title – Employer - Country
2020-*	**Professor - Technical University of Cluj-Napoca - Romania**
2020-*	**Director of Distributed Systems Research Laboratory http://dsrl.eu**
2019-2020	Habilitated Associate Professor- Technical University of Cluj-Napoca - Romania
2018-2019	Associate Professor- Technical University of Cluj-Napoca - Romania
2014-2018	Lecturer- Technical University of Cluj-Napoca - Romania
2013-2014	Assistant professor- Technical University of Cluj-Napoca - Romania
2007-2013	Graduate assistant - Technical University of Cluj-Napoca - Romania
2006-2007	Research Assistant- Technical University of Cluj-Napoca - Romania

Education

Year	Faculty/department - University/institution - Country
2019	Habitation – Title: "Efficient management of resources in large scale distributed systems"
2013	Ph.D. - Faculty of Automation and Computer Science, Computer Science Department - Technical University of Cluj-Napoca - Romania Thesis title: Context aware adaptive systems with applicability in green service centres
2008	Master - Faculty of Automation and Computer Science, Computer Science Department - Technical University of Cluj-Napoca - Romania Thesis title: Self-adaptive and context aware systems

Research projects director

Year	Project title - Role – Funder – Budget – link to project webpage
2024-2027	Holistic Approach towards Empowerment of the DiGitalization of the Energy Ecosystem through adoption of IoT solutions (HEDGE-IoT) – **UTCN Project Manager** – Horizon Europe – 22.500.000 Euro; *Developing and combining modern technologies in the field of ICT, such as IoT, AI/ML, blockchain, Edge computing and massive data processing, for optimization techniques in smart grids considering also the social/behavioural dimension, the shared economy and interrelation between cross-sectoral services.*
2023-2026	Data-driven Residential Energy Carrier-agnostic Demand Response Tools and Multi-value Services (DEDALUS) – **UTCN Project Manager** - Horizon Europe – 7.359.000 Euro -

	https://dedalus-horizon.eu/; *Research activities: Development and integration of AI/ML techniques and technologies for all levels of the energy grid infrastructure, from edge devices to Fog and Cloud services. Development and orchestration of AI/ML solutions to effectively manage and coordinate resources and data.*
2024-2025	Data-driven tools and services for energy-agnostic demand response programs in residential buildings– **UTCN Project Manager** – PN IV – 23.000 Euro; *Research activities: Deepening the research directions in the field of energy and artificial intelligence aiming to identify themes and accumulate knowledge that can be exploited in new proposals for research projects.*
2020-2023	Boosting DR through increased communIty-level consumer engaGement by combining Data-driven and blockcHain technology Tools with social science approaches and multi-value service design (BRIGHT) - **UTCN Project Manager** - Horizon 2020 – 5.877.633 Euro - https://www.brightproject.eu/; *Research activities: Development of decentralized prediction and optimization techniques for autonomous energy communities based on real-time adaptive control and enabling individual assets to provide at the same time power balancing services, management network congestion and economic benefits for stakeholders; Federated AI/ML via integration with the blockchain network.*
2020-2023	Social robot-based solution for elders' Care management and coaching after discharge from Hospital to Home (H2HCare) – **Consortium Coordinator** - Horizon 2020 (AAL) – 1.642.448 Euro - https://h2hcare-aal.eu/; *Research activities: Development and integration of IoT monitoring devices with advanced AI/ML techniques for the identification and stratification of health risks in the case of patients with heart failure. Coordinated a multidisciplinary team (academy, industry and research organisations) addressing computer science, medical, and patient challenges in transitional care and managed the technical and scientific work.*
2021-2023	Increasing the involvement of energy consumers at the level community by combining technologies of data analysis and blockchain - **UTCN Project Manager** – PN III – 37.000 Euro - https://dsrl.eu/BRIGHT-PP10-2021/; *Research activities: Enhancing and adding improved functionalities to existing DSRL techniques aiming to increase the TRL (Technology Readiness Level) of some components and technologies so that they can be exploited in new research projects.*
2018-2021	enabling new Demand REsponse Advanced, Market oriented and Secure technologies, solutions and business models (eDREAM) - **UTCN Project Manager** - Horizon 2020 – 3.822.125 Euro - http://edream-h2020.eu/; *Research activities: AI/ML techniques for energy transition management in decentralized smart grids, fully exploring big data, local capabilities, constraints and optimizing flexibility through blockchain technology ensuring node stabilization and security in the distribution of electricity.*
2017-2020	Converting DCs in Energy Flexibility Ecosystems (CATALYST) - **UTCN Project Manager** - Horizon 2020 – 2.982.805 Euro; *Research activities: Innovative technologies that enable data centers in smart cities to offer a range of energy flexibility services to both electricity and heat networks; multi-criteria optimization in the cloud for integration with the energy grid; development of local energy markets and cloud migration strategies to track renewable energy.*
2017-2019	ICT Integrated System for Coordinated Polypharmacy Management in Dementia Patients (MedGuide) – **Project Scientific and Technical Manager** – FP7 AAL – 2.039.024 Euro - http://medguide-aal.eu/; *Research activities: Design and development of an integrated set of fully personalized ICT services based on AI/ML offering support for better dementia care and self-management of drug related problems associated to polypharmacy.*

2016-2019	Blockchain distributed systems and services - **UTCN Project Manager** - Montran Labs USA – 40.000 Euro; *Research activities: Blockchain algorithms, models, techniques, technology and services for electronic registration, transacting and processing of assets.*
2016-2020	Improving Applicability of Nature-Inspired Optimisation by Joining Theory and Practice (ImAppNIO) – **Outreach Coordinator** – COST – 600.000 Euro - https://imappnio.dcs.aber.ac.uk/contacts; *Research activities: Proposing meta-heuristics for various optimization use-cases in the fields of energy efficient smart grids and cloud data centers.*
2016-2018	Technologies for Digitalization, Analysis and Optimization of Manufacturing of Flow Regulators and Monitors at Emerson Factory (OptiPlan) - **UTCN Project Manager** – PN III – 100.000 Euro - https://dsrl.eu/OptiPlan/; *Research activities: Big data analytics e for analysis and visualization of different production efficiency perspectives and for enabling production planning in a coordinated manner providing support for inference of operating parameters and optimal configuration of Industry 4.0 systems.*
2018	Towards developing context aware pervasive systems - **UTCN Project Manager** – PN II – 10.000 Euro; *Research activities: Design and development of self-adaptive techniques with application in different scenarios such as smart homes or green data centres.*

Other relevant professional experiences
(e.g. institutional responsibilities, organisation of scientific meetings, membership in academic societies, review boards, advisory boards, committees and major research or innovation collaborations, other commissions of trust in public or private sector)

Year	Description - Role
2023	**Invited professor at École Polytechnique de l'Université de Nantes, France**; Lectured about blockchain supplication in smart grid operation; Pursued in discussions to identify potential research areas of mutual interest, explored avenues for joint publications, and brainstormed ideas for future collaborative projects.
2023	**Invited Speaker at VLDB Summer School 2023**; Presentation about blockchain in smart grids https://vldb.org/summerschool/2023/speakers/
2023	**Co-supervision of PhD**: Federico Carere - Managing Energy Flexibility Across the Power Distribution Network; Sapienza University of Rome.
2021-*	**Distributed Systems Research Laboratory (DSRL) Director** - https://dsrl.eu/
2021-*	Member of the **Council of the Faculty of Automation and Computer Science**, Technical University of Cluj-Napoca
2021-*	Member of the **Council for Projects Research and Development Assessment** - Direction for Research, Development and Innovation Management (DMCDI), Technical University of Cluj-Napoca
2020-*	**PhD Advisor** (6 PhD students enrolled); Member in **Committees for PhD thesis defence**; Member in **Committees for PhD admission**;
2014-*	**Journals review boards**: Future Generation Computer Systems (Elsevier), Sustainable Computing (Elsevier), Sustainability (MDPI), Information Sciences (Elsevier), Journal of Parallel and Distributed Computing (Elsevier), Computer Journal (Oxford) **Conferences PC Member**: MCIS2014, IMIS2015, ICCP2016, ENBIS2018, CSE2018, ICCP2019, CSCS2019, ICCP2020, ISPDC2021, CSCS2021, E2DC2021, ICCP2022, ICCP2023

Relevant 10 publications

1. **T. Cioara**, I. Anghel, I. Salomie, M. Antal, C. Pop, M. Bertoncini, D. Arnone, F. Pop, Exploiting data centres energy flexibility in smart cities: Business scenarios, *Information Sciences*, Elsevier, 2019, ISSN 0020-0255 **WoS Q1**

2. M. Antal, C. Pop, **T. Cioara**, I. Anghel, I. Salomie, F. Pop, A System of Systems approach for data centers optimization and integration into smart energy grids, *Future Generation Computer Systems*, Elsevier, Volume 105, 2020, Pages 948-963, ISSN 0167-739X. **WoS Q1**

3. M. Antal, C. Pop, T. Petrican, A. Valeria Vesa, **T. Cioara**, I. Anghel, I. Salomie, E. Niewiadomska-Szynkiewicz, MoSiCS: Modeling, simulation and optimization of complex systems–A case study on energy efficient datacenters, *Simulation Modelling Practice and Theory*, Elsevier, Volume 93, 2019, Pages 21-41, ISSN 1569-190X **WoS Q1**

4. **T. Cioara**, I. Anghel, M. Bertoncini, I. Salomie, D. Arnone, M. Mammina, T.-H. Velivassaki, M. Antal, Optimized flexibility management enacting Data Centres participation in Smart Demand Response programs, *Future Generation Computer Systems*, Elsevier, Volume 78, Part 1, 2018, Pages 330-342, ISSN 0167-739X, **WoS Q1**

5. D. Mitrea, L. Toderean, **T. Cioara**, I. Anghel, M. Antal, Smart contracts and homomorphic encryption for private P2P energy trading and demand response on blockchain, Elsevier, *Heliyon*, Elsevier, 2023, e22357, ISSN 2405-8440 **WoS Q2**

6. L. Toderean, V. R. Chifu, **T. Cioara**, I. Anghel and C. B. Pop, Cooperative Games Over Blockchain and Smart Contracts for Self-Sufficient Energy Communities, *IEEE Access*, vol. 11, pp. 73982-73999, 2023 **WoS Q2**

7. C. B. Pop, **T. Cioara**, I. Anghel, M. Antal, V. R. Chifu, C. Antal, I. Salomie, Review of bio-inspired optimization applications in renewable-powered smart grids: Emerging population-based metaheuristic. *Energy Reports*, Elsevier, Volume 8, 2022, Pages 11769-11798, ISSN 2352-4847 **WoS Q2**

8. **T. Cioara**, M. Antal, V. T. Mihailescu, C. D. Antal, I. Anghel and D. Mitrea, Blockchain-Based Decentralized Virtual Power Plants of Small Prosumers, in *IEEE Access*, vol. 9, pp. 29490-29504, 2021. **WoS Q2**

9. C. Antal, **T. Cioara**, M. Antal, V. Mihailescu, D. Mitrea, I. Anghel, I. Salomie, G. Raveduto, M. Bertoncini, V. Croce, T. Bragatto, F. Carere, F. Bellesini, Blockchain based decentralized local energy flexibility market, *Energy Reports*, Elsevier, Vol. 7, 2021, Pages 5269-5288, ISSN 2352-4847 **WoS Q2**

10. C. Pop, **T. Cioara**, M. Antal, I. Anghel, I. Salomie and M. Bertoncini, Blockchain Based Decentralized Management of Demand Response Programs in Smart Energy Grids, *Sensors* 2018, 18(1), 162., **WoS Q2**, *highest cited blockchain paper from Romania*

Narrative CV summarizing the research importance and impact

Prof. Cioara is the Distributed Systems Research Laboratory (DSRL) director (https://dsrl.eu/). He was the consortium coordinator of one European project leading a multidisciplinary team from academy, industry and research organizations and coordinating technical and scientific work. Prof. Cioara is currently UTCN project manager of two Horizon Europe projects (*HEDGE-IoT* and *DEDALUS*) and one national project (40PHE-2024). In *HEDGE-IOT (2024-2028)* he coordinates the research activities related to edge offloading and orchestration of edge nodes in smart grid scenarios while in *DEDALUS (2023-2026)* the activities related to buildings efficient integration in energy grids and flexibility aggregation using blockchain and distributed heuristics. He successfully managed one Horizon Europe project *BRIGHT (2021-2023)* addressing research on energy grid decentralization and prosumers cooperation, and two H2020 projects, *eDREAM (2018-2021)* and *CATALYST (2017-2020)*. In H2020 project *CATALYST* he had managed the activities related to cloud data centers optimization in synergy with energy grid sustainability objectives, while in *FP7 GEYSER (2014-2016)* project he management the work package on workload distribution and efficient scheduling. In all coordinated projects, he was responsible for coordinating the research and technical activities of work packages as well as

UTCN research team integration activities and compliance with the description of work. He was responsible for ensuring the high technical quality of reports and deliverables and for monitoring the progress of research team activities covering scientific and technical aspects. He coordinated 3 national projects (*OptiPlan-with Emerson, PNIII PP10, BD 2018*) and one bilateral cooperation project with Montran USA showing good research management expertise in managing the relation with industry. Finally, he was also a consortium coordinator of a European project joining partners from 5 countries, *H2020 H2HCare (2020-2023)* and the Scientific and Technical Manager of the *FP7 MedGuide (2017-2019)* and had the role of outreach coordinator in a COST action on nature-inspired optimization heuristics. His ability to manage relationships with diverse stakeholders, including academia and industry, underscores his proficiency in bridging the gap between theoretical research and practical applications, driving innovation, and advancing knowledge exchange.

Prof. Cioara core expertise extends to distributed systems, encompassing topics such as decentralized architectures, peer-to-peer networks, and specializes in IoT and energy blockchain integration, smart contracts, distributed data management and cyber-security. His scientific contributions in this area aim at revolutionizing data, energy, and business ecosystems. *He proposed innovative smart contracts and distributed algorithms to serve as the backbone of market operations, demand response services, and interoperability, eliminating the need for intermediaries and fostering trust amongst participants. At the forefront lies groundbreaking heuristics and cooperative game models proposed on top of peer-to-peer networks to optimize coalitions of participants integrating social dynamics, enabling cooperative energy and data exchanges. Complementary research achievements address cybersecurity aspects over peer-to-peer infrastructures leveraging multi-party computation, homomorphic encryption, and zero-knowledge proofs, facilitating privacy-preserving collective intelligence of the network.* Prof. Cioara has specialized knowledge on energy-efficient computing solutions, particularly for cloud data centers and smart energy grids where optimizing data distribution and energy consumption is crucial. *The publications in this area are reflecting the contributions and research achievements in a wide range of fundamental techniques such as system of system modeling and simulation, digital twin models, linear and non-linear optimizations, constrained resource scheduling, etc. As result, his work contributed to the ongoing efforts of transforming the data centers into technological flexible resources that can provide flexible services such as congestion management, heat reuse in the local neighborhood and workload migration to follow the renewable energy.* Prof. Cioara is proficient in machine learning, federated data processing, and edge computing, exploring techniques for edge offloading, orchestration, and optimization to reduce latency and improve efficiency. *His research achievements address the innovative combination of federated machine learning with novel nature-inspired heuristics, leveraging distributed intelligence to optimize data processing and analysis across decentralized networks. He made relevant contributions addressing the uncertainty about service delivery using deep neural network models, empowering decision-makers with remarkable insights into future trends and patterns. Complementing these advancements are distributed machine learning pipelines, orchestrating the data processing flows, and considering edge fog cloud architecture.*

Date: 25.07.2025

Tudor Cioara