


PERSONAL INFORMATION


Catalin NEGRU



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Sex Male | Date of birth 07/10/1983 | Nationality Romanian

PERSONAL STATEMENT

Currently, I work as a Second-Degree researcher at the Research Development for Product Development, Intelligent Innovative Processes and Services (PRECIS) Department within the National University of Science and Technology POLITEHNICA Bucharest. I have a Ph.D. in Computer Science at the University Politehnica of Bucharest, Faculty of Automatic Control and Computers. The main subject of the PhD thesis was "Resource Management for Cost Optimization in Cloud Storage Systems".

My teaching activity took place in the Computer Science and Engineering Department. Since 2015, I have been an associate teacher within the Computer Science & Engineering Department, Faculty of Automatic Control and Computers.

I teach classes and applications on: Introduction to Big Data, Policies in Distributed Systems. In the past, I used to teach the following courses: Service-Oriented Architecture of Information Systems, Web Programming and Development Applications for the Internet.

My main research interests are in resource management systems Cloud storage, energy efficiency, cost model optimization, Edge/Fog Computing, Smart Cities, and Microservices.

I have over 10 years in national and international research projects, of which the most relevant are:

- **ForestMon**- Experimental software system in Cloud architecture for monitoring woody vegetation cover ” - **Project director**;
- **StorEdge** - Decentralized storage system for Edge Computing - **Project director**;
- **CREAM** - Collision Risk Estimation and Automated Mitigation - **Project director**;
- **TrainRDM** - Open Science and Research Data Management Innovative and Distributed Training Programme - Member;
- **EELISA InnoCORE** - EELISA INNOvation and COMmon REsearch Strategy - Member;
- **„DATAWAY**: Real-Time Data Processing Platform for Smart Cities: Making sense of Big Data" - Member.

WORK EXPERIENCE

15 Jan 2020-Present

Second-Degree Researcher

National University of Science and Technology Politehnica of Bucharest, PRECIS Research Centre (Romania);

1 Oct 2015–Present

Associate Teacher

National University of Science and Technology Politehnica of Bucharest, Faculty of

Automatic Control and Computer Science, Computer Science Department (Romania);

Courses I teach:

- Introduction to Big Data (first year of Master);
- Policies in Distributed Systems (second year of Master);

Laboratory applications:

- Integration of Information Systems (using GIS technologies).

15 Dec 2008–Present **System Engineer**

University Politehnica of Bucharest, Bucuresti (Romania)

- webmaster for the computer science department website;
- manage and monitoring computer systems and infrastructure;
- install, configure, test and maintain operating systems, application software and system management tools.

1 Oct 2005–15 Sep 2007 **Web developer**

Sonic&Media Service, Bucharest (Romania)

- design web applications
- create websites using Joomla, Wordpress platforms;
- implement web applications using PHP and MySql;

EDUCATION AND TRAINING

1 Oct 2021 – 31 October 2023 **Postdoc researcher in Distributed Systems, at the Faculty of Automatic Control and Computers from National University of Science and Technology POLITEHNICA Bucharest.** The postdoc dissertation is entitled "Microservices workflow management for Cloud/Edge platforms", under the supervision of Prof.Dr.Eng. Florin Pop.

1 Oct 2011–28 Jul 2016 **PhD in computers and information technology**

Faculty of Automatic Control and Computers, University POLITEHNICA of Bucharest, Bucharest (Romania)

Thesis title: "Resource Management for Cost Optimization in Cloud Storage Systems "

1 Oct 2009–15 Jun 2011 **Master (MSc) Advanced Computer Architectures**

Faculty of Automatic Control and Computers, University POLITEHNICA of Bucharest, Bucharest (Romania)

1 Oct 2002–15 Jun 2008 **Diplomat Engineer in Systems Engineering**

Faculty of Automatic Control and Computers, University POLITEHNICA of Bucharest (Romania)

15 Sep 1998–15 May 2002

Baccalaureate diploma

Colegiul National "Mircea cel Batran", Ramnicu Valcea (Romania)

PERSONAL SKILLS

Mother tongue(s) Romanian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
French	B1	B1	B1	B1	B1

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Communication skills

- **Good communication skills gained during my PhD;**
- **Good presentation skills gained through participation at scientific conferences;**

Job-related skills

- Effective Communication
- Empathy
- Proactive ;
- Team spirit;
- Adaptability

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

Digital skills - Self-assessment grid

Programming languages:

- JAVA/JEE, Microsoft Visual C#, .Net, PHP.

Web UI technologies:

- XML, HTML/HTML5, XHTML, CSS/CSS3, Bootstrap, JavaScript, JQuery, angular.js, js, node.js, AJAX, JSON, Grunt and Gulp

Development tools (IDE):

- Eclipse, NetBeans;
- Microsoft Visual Studio;

Operating systems:

- Linux (Ubuntu, CentOS, RedHat);

- Windows (Server 2008, 7, 10);

Driving licence AM, B, BE

ADDITIONAL INFORMATION

Summary:

Publications

1. **Negru, Catalin**, George Musat, Madalin Colezea, Constantin Anghel, Alexandru Dumitrascu, Florin Pop, Carmen De Maio, and Aniello Castiglione. "Dependable workflow management system for smart farms." *Connection Science* 34, no. 1 (2022): 1833-1854.
2. Tudorescu, Ana-Maria, **Catalin Negru**, Bogdan-Costel Mocanu, and Florin Pop. "Quality sustaining vegetation index for natural resources monitoring using satellite images." *Engineering Science and Technology, an International Journal* 59 (2024): 101847.
3. Firuți, Bogdan-Cristian, Răzvan-Ștefan Păduraru, **Cătălin Negru**, Alina Petrescu-Niță, Octavian Bădescu, and Florin Pop. "Road risk-index analysis using satellite products." *Sensors* 23, no. 5 (2023): 2751.
4. Ciobanu, Radu-Ioan; **Negru, Catalin**; Pop, Florin; Dobre, Ciprian; Mavromoustakis, Constandinos X; Mastorakis, George. **Drop computing: Ad-hoc dynamic collaborative computing**, *Future Generation Computer Systems*, 92, 889-899, 2019, North-Holland.
5. Tufa, Adriana; Boicu, Ionuț; Filip, Ion-Dorinel; **Negru, Catalin**; Pop, Florin. **Remote Sensing Computing Model for Forest Monitoring in Cloud**, 2018 IEEE 16th International Conference on Embedded and Ubiquitous Computing (EUC), 138-144, 2018, IEEE.
6. Predescu, Alexandru; **Negru, Cătălin**; Mocanu, Mariana; Lupu, Ciprian; Candelieri, Antonio. **A multiple-layer clustering method for real-time decision support in a water distribution system**, *International Conference on Business Information Systems*, 485-497, 2018, Springer, Cham.
7. Predescu, Alexandru; **Negru, Cătălin**; Mocanu, Mariana; Lupu, Ciprian. **Real-time clustering for priority evaluation in a water distribution system**, 2018 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 1-6, 2018, IEEE.
8. Năstase, Liviu; **Negru, Cătălin**; Pop, Florin. **Understanding and Making Sense of Maritime Navigation Datasets**, 2018 IEEE 14th International Conference on Intelligent Computer Communication and Processing (ICCP), 357-364, 2018, IEEE.
9. Musat, George-Alexandru; Colezea, Mădălin; Pop, Florin; **Negru, Catalin**; Mocanu, Mariana; Esposito, Christian; Castiglione, Aniello. **Advanced services for efficient management of smart farms**, *Journal of Parallel and Distributed Computing*, 116, 3-17, 2018, Academic Press.
10. Dorinel, Filip Ion; Bogdan, Ghita; Florin, Pop; George-Valentin, Iordache; **Catalin, Negru**; Ciprian, Dobre. **EdgeMQ: Towards a Message Queuing Processing System for Cloud-Edge Computing:(Use Cases on Water and Forest Monitoring)**, 2018 17th International Symposium on Parallel and Distributed Computing (ISPDC), 46-52, 2018, IEEE.
11. Colezea, Madalin; Musat, George; Pop, Florin; **Negru, Catalin**; Dumitrascu, Alexandru; Mocanu, Mariana. **CLUeFARM: Integrated web-service platform for smart farms**, *Computers and Electronics in Agriculture*, 154, 134-154, 2018, Elsevier.
12. Vasiliu, Laura; Pop, Florin; **Negru, Catalin**; Mocanu, Mariana; Cristea, Valentin; Kolodziej, Joanna. **A hybrid scheduler for many task computing in big data systems**, *International Journal of Applied Mathematics and Computer Science*, 27, 2, 385-399, 2017, De Gruyter Open.
13. Sotiriadis, Stelios; Bessis, Nik; Petrakis, Euripides GM; Amza, Cristiana; **Negru, Catalin**; Mocanu, Mariana. **Virtual machine cluster mobility in inter-cloud platforms**, *Future Generation Computer Systems*, 74, , 179-189, 2017, North-Holland.
14. **Negru, Catalin**; Pop, Florin; Mocanu, Mariana; Cristea, Valentin. **Storage Solution of Spatial-**

- Temporal Data for Water Monitoring Infrastructures Used in Smart Cities**, 2017 21st International Conference on Control Systems and Computer Science (CSCS), 617-621, 2017, IEEE.
15. **Negru, Catalin**; Mocanu, Mariana; Cristea, Valentin; Sotiriadis, Stelios; Bessis, Nik. Analysis of power consumption in heterogeneous virtual machine environments, *Soft Computing*, 21, 16, 4531-4542, 2017, Springer Berlin Heidelberg.
 16. Iordache, George; Paschke, Adrian; Mocanu, Mariana; **Negru, Cătălin**. **Service Level Agreement Characteristics of Monitoring Wireless Sensor Networks for Water Resource Management (SLAs4Water)**, *Studies in Informatics and Control*, 26, 4, 379-386, 2017.
 17. Pop, Florin; **Negru, Catalin**; Ciolofan, Sorin N; Mocanu, Mariana; Cristea, Valentin. **Optimizing intelligent reduction techniques for big data**, *Big Data Optimization: Recent Developments and Challenges*, 49-70, 2016, Springer, Cham.
 18. **Negru, Catalin**; Pop, Florin; Mocanu, Mariana; Cristea, Valentin; Hangan, Anca; Vacariu, Lucia. **Cost-aware cloud storage service allocation for distributed data gathering**, 2016 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 1-5, 2016, IEEE.
 19. **Negru, Catalin**; Pop, Florin; Mocanu, Mariana; Cristea, Valentin. **A unified approach to data modeling and management in big data era**, *Data Science and Big Data Computing*, 95-116, 2016, Springer, Cham.
 20. **Negru, Catalin**; Pop, Florin; Marcu, Ovidiu Cristian; Mocanu, Mariana; Cristea, Valentin. **Budget constrained selection of cloud storage services for advanced processing in datacenters**, 2015 14th RoEduNet International Conference-Networking in Education and Research (RoEduNet NER), 158-162, 2015, IEEE.
 21. **Negru, Catalin**; Mocanu, Mariana; Cristea, Valentin. **Impact of virtual machines heterogeneity on data center power consumption in data-intensive applications**, *International Workshop on Adaptive Resource Management and Scheduling for Cloud Computing*, 91-102, 2015, Springer, Cham.
 22. **Negru, Catalin**; Mocanu, Mariana; Chiru, Costin; Draghia, Aurelian; Drobot, Radu. **Cost efficient cloud-based service oriented architecture for water pollution prediction**, 2015 IEEE International Conference on Intelligent Computer Communication and Processing (ICCP) , 417-423, 2015, IEEE.
 23. Mocanu, Mariana; Cristea, Valentin; **Negru, Catalin**; Pop, Florin; Ciobanu, Vlad; Dobre, Ciprian. **Cloud-based architecture for farm management**, 2015 20th International Conference on Control Systems and Computer Science, 814-819, 2015, IEEE.
 24. Marcu, Ovidiu-Cristian; **Negru, Catalin**; Pop, Florin. **Dynamic Scheduling in Real Time with Budget Constraints in Hybrid Clouds**, *International Conference on the Economics of Grids, Clouds, Systems, and Services*, 18-31, 2015, Springer, Cham.
 25. Pop, Florin; Ciolofan, Sorin; **Negru, Catalin**; Mocanu, Mariana; Cristea, Valentin. **A bio-inspired prediction method for water quality in a cyber-infrastructure architecture**, 2014 Eighth International Conference on Complex, Intelligent and Software Intensive Systems, 367-372, 2014, IEEE.
 26. Nicolae, Andrei Alexandru; **Negru, Catalin**; Pop, Florin; Mocanu, Mariana; Cristea, Valentin. **Hybrid algorithm for workflow scheduling in cloud-based cyberinfrastructures**, 2014 17th International Conference on Network-Based Information Systems, 221-228, 2014, IEEE.
 27. **Negru, Catalin**; Pop, Florin; Valentin, Cristea. **Cost Optimization for Data Storage in Public Clouds: A User Perspective**, 13th International Conference on Informatics in Economy (IE 2014), 2014, .
 28. Andrei, Pistirica Sorin; Victor, Asavei; Horia, Geanta; Florica, Moldoveanu; Alin, Moldoveanu; **Catalin, Negru**; Mariana, Mocanu. **Evolution towards distributed storage in a nutshell**, 2014 IEEE Intl Conf on High Performance Computing and Communications, 2014 IEEE 6th Intl Symp on Cyberspace Safety and Security, 2014 IEEE 11th Intl Conf on Embedded Software and Syst (HPCC, CSS, ICESS), , , 1267-1274, 2014, IEEE.

29. Pop, Florin; **Negru, Catalin**; Cristea, Valentin; Bessis, Nik. **Inspector: integrated service platform for management of academic and research communities over the internet**, 2013 19th International Conference on Control Systems and Computer Science, 247-254, 2013, IEEE.
30. Pop, Florin; Dobre, Ciprian; **Negru, Catalin**; Cristea, Valentin. **Re-scheduling Service for Distributed Systems**, Advances in Intelligent Control Systems and Computer Science, 423-437, 2013, Springer, Berlin, Heidelberg.
31. **Negru, Cătălin**; Pop, Florin; Dobre, Ciprian; Cristea, Valentin. **Performance Analysis of Lustre File Systems Based on Benchmarking for a Cluster System**, U.P.B. Scientific Bulletin Series C, 75, 1, 27-36, 2013, Politehnica Press.
32. **Negru, Catalin**; Pop, Florin; Cristea, Valentin; Bessisy, Nik; Li, Jing. **Energy efficient cloud storage service: key issues and challenges**, 2013 Fourth International Conference on Emerging Intelligent Data and Web Technologies, 763-766, 2013, IEEE.
33. **Negru, Catalin**; Cristea, Valentin. **Cost models—pillars for efficient cloud computing: position paper**, International Journal of Intelligent Systems Technologies and Applications, 12, 1, 28-38, 2013, Inderscience Publishers Ltd.
34. Pop, Florin; Lovin, Maria-Alexandra; **Negru, Catalin**; Cristea, Valentin; Bessis, Nik; Sotiriadis, Stelios. **Grid configuration and application monitoring in GridGain**, 2012 Fourth International Conference on Intelligent Networking and Collaborative Systems, 155-161, 2012, IEEE.
35. **Negru, Catalin**; Pop, Florin; Dobre, Ciprian; Cristea, Valentin. **Benchmark Analysis for Advanced Distributed Data Storage for Heterogeneous Clusters**, Euromedia, 7, 2012.

Research Projects

- „DATAWAY: Real-Time Data Processing Platform for Smart Cities: Making sense of Big Data”
 - **Real-time Data Processing Platform for Smart Cities focusing on making sense of Big Data by extracting valuable information;**
- „CYBERWATER: Prototype Cyberinfrastructure-based System for Decision-Making Support in Water Resources Management”
 - **e-Platform using advanced computational and communication technology for managing water and land resources;**
- „CLUeFARM: Formation System Based on Cloud Services, Accessible Through Mobile Devices, for Quality Improvement of Products and Business Development in Farms”
 - **Cloud services-based system, using advanced computer technology, automation and communications to increase product quality and business development in the area of farming.**
- „SideSTEP: Scheduling Methods for Dynamic Distributed Systems: a self-* approach”
 - **Improved and new enforcement solutions based on various methods for self-adaptive and faults resilient systems with global optimization criteria for scheduling;**
- „SideDOWN: Smart Internet Data Downloader and Aggregator”
 - **Platform for data aggregation from different web sources.**
- **ClueFarm** – Information system based on cloud services, accessible through mobile devices, for quality improvement of products and business development in farms, CNCSIS-PN-II-PT-PCCA-2013-4,