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Prof. Dr. Eng. Florin Pop
PhD coordination in "Computers and Information Technology"
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Research profile:

My general research interests are: large-scale distributed systems (design and performance); Grid computing and cloud computing; Peer-to-peer systems, Big data management; Data aggregation; Information retrieval and ranking techniques; Bio-inspired optimization methods. My specific research interests are oriented on adaptive resource management in heterogeneous distributed systems, with scientific oriented on Cluster Computing (datacenters), Grid Computing, Peer-to-Peer Computing, and Cloud Computing all involving elements of heterogeneity.

The main scientific theoretical and experimental results are: models for adaptive resource management, evolutionary algorithms for task scheduling, dependable services for large scale distributed systems, adaptive methods for resource management in dynamic distributed systems, resource management for efficient data handling, big data processing, self-properties in distributed systems, adaptive (and nature-inspired) Peer-to-Peer overlays, multi-criteria optimization, and service-oriented based frameworks (smart cities, farm management, water resources management).

PhD coordinator since 2015

- 8 PhD theses undergoing

Scientific Publications

- 30+ articles in ISI journals (Cumulative IF: >40), 4 authored books, 3 edited books, over 100 publications (chapters, articles in non-ISI journals, and papers in conferences and workshops - authored, coordinated or co-authored).
- H-index = 18 (Google Scholar), i10-index = 38 (early research career), M-index = 1, 23.
- 20+ research reports.
- More information is available on: http://florin.hpc.pub.ro.

Research Project (selection, last 10 years):

- 2013-2014: *SideSTEP: Scheduling Methods for Dynamic Distributed Systems: a self-* approach*, Bilateral RO-FR Project, PN-II-CT-RO-FR-2012-1-0084, Contract 718/11.04.2013, Period: January 2013 - December 2014, Project Director: **Florin Pop**.
- 2012-2013: *SideDOWN: Smart Internet Data Downloader and Aggregator*, Innovation Project PN-II-IN-CI-2012-1-0324, Contract 165CI/09.11.2012, Period: November 2012 - April 2013, Project Director: **Florin Pop**.
- 2010-2012: *SORMSYS: Resource Management Optimization in Self-Organizing Large Scale Distributed Systems,* Postdoctoral Research Project, CNCSIS-PN-II-RU-PD-2010-220, Contract 5/28.07.2012, Period: July 2010-July 2012, Project Director: **Florin Pop**.
- 2007-2009: *Intelligent Strategies for Scheduling Optimization in Grid Environments*, PhD Research Project, CNCSIS-PN-I-RU-TD-20, Contract 49GR/2007, Period: May 2007 - May 2009, Project Director: **Florin Pop**.
- ICT COST Action IC1302, "*Semantic keyword-based search on structured data sources*" (KEYSTONE). MC Member (responsible partner): **Florin Pop** (UPB). Period: November 2013 - November 2017
- ICT COST Action CA15140, "*Improving Applicability of Nature-Inspired Optimisation by Joining Theory and Practice*" (ImAppNIO), project EU COST. MC Member (responsible partner): **Florin Pop** (UPB). WG 4 (Software) Vice-Leader, Period: May 2016 - April 2020.
- 2016 – 2019: Data4Water - *Excellence in Smart Data and Services for Supporting Water Management*, H2020-TWINN-2015, Director: Prof.dr.ing. Mariana Mocanu (UPB). Responsible for WG 2: **Florin Pop**.
- May 2010 – April 2013: CollectGATE - *Data Aggregation and Information Retrieval Services*, Research contract no. EXCEL N1/12/01.05.2010 (Research subject responsible: **Florin Pop**), financed through POSDRU/89/1.5/S/62557 (Project Manager: Corneliu Burileanu).

Membership in scientific organization, editorial board

- Member of: IEEE, ACM, SRAIT, euroCRIS.
- Lead Guest Editor, Special Issue on Advanced Topics in Resource Management for Ubiquitous Cloud Computing: an Adaptive Approach (ARMCO), Journal: Future Generation Computer Systems (FGCS), Guest Editors: Florin Pop, Maria Potop-Butucaru, 2016, ISSN: 0167-739X
- Lead Guest Editor, Special Issue on Resource Management for Big Data Platforms (RM-BDP), Journal: Future Generation Computer Systems (FGCS), Guest Editors: Florin Pop, Radu Prodan, Gabriel Antoniu, 2016, ISSN: 0167-739X
- Guest Editor, Special Issue on Modeling and Evaluation of Highly complex Computer Systems Architectures, Journal of Computational Science, Guest Editors: Mauro Iacono, Marco Gribaudo, Joanna Kołodziej, Florin Pop, 2016, ISSN: 1877-7503

- Lead Guest Editor, Special Issue on Middleware Services for Heterogeneous Distributed Computing (MidHDC), Journal: Future Generation Computer Systems (FGCS), Guest Editors: Florin Pop, Xiaomon Zhu, Laurence Young, 2016, ISSN: 0167-739X

- Lead Guest Editor, Special Issue on High Performance Scheduling for Heterogeneous Distributed Systems (HPS-HDS), Journal: Future Generation Computer Systems (FGCS), Guest Editors: Florin Pop, Alexandru Iosup, Radu Prodan, 2016, ISSN: 0167-739X

- Lead Guest Editor, Special Issue on Advances in Modelling and Simulation for Big-data Applications (AMSBA), Journal: Concurrency and Computation: Practice and Experience (CCPE), Guest Editors: Florin Pop, Mauro Iacono, Marco Gribaudo, Joanna Kołodziej, 2016, ISSN: 1532-0634

- Lead Guest Editor, Special Issue on Autonomic Computing and Big Data Platforms (AutoCompBD), Journal: Soft Computing (SOCO), Guest Editors: Florin Pop, Ciprian Dobre, Alexandru Costan, 2016, ISSN: 1432-7643

- Guest Editor, Special Issue on Propagation Phenomena and Transitions in Complex Systems (PPTCS), Journal: Mathematical Problems in Engineering (MPE), Guest Editors: Ezzat G. Bakhoum, Haipeng Peng, and Florin Pop, 2015, ISSN: 1024-123X

- Guest Editor, Special Issue on Modeling and Evaluation of Highly complex Computer Systems Architectures (MEHCSA), Journal: Journal of Computational Science, Guest Editors: Mauro Iacono, Marco Gribaudo, Joanna Kołodziej, Florin Pop, 2017, ISSN: 1877-7503

- Guest Editor, Special Issue on Resource Management in Virtualized Clouds (RMVC), Journal: Scientific Programming, Guest Editors: Ligang He, Laurence T. Yang, Zhihui Du, Florin Pop, 2016, ISSN: 1058-9244

- Guest Editor, Special Issue on Advances in Distributed Systems Services for Grid, Cloud and Large-Scale Computing Paradigms, Journal: International Journal of Web and Grid Services, Guest Editors: Fatos Xhafa, Leonard Barolli, Florin Pop and Makoto Takizawa, 2012, ISSN: 1741-1106

- Lead Guest Editor, Special Issue on Cloud Computing for Enhanced Living Environments: Algorithms, Architectures and Platforms (Cloud4ELE), Journal: IEEE Cloud Computing Magazine, , Guest Editors: Florin Pop, Carlos Valderrama, Kiril Belov, Ivan Ganchev, Beniamino Di Martino, 2016

- Lead Guest Editor, Special Issue on Cloud Services for Natural Resource Management (Cloud4Nature), Journal: International Journal of Computational Science and Engineering, Guest Editors: Florin Pop, Mariana Mocanu, Ioana Popescu, 2016

- Editor, International Journal of Computational Science and Engineering (IJCSE), Inderscience, ISSN: 1742-7185

- Editor, International Journal of High Performance Computing and Networking (IJHPCN), Inderscience, ISSN: 1740-0562

- Associate Editor, International Journal of Information Processing and Management (IJIPM), Convergence Information Society (CIS), ISSN: 2093-4009

- Associate Editor, EAI Endorsed Transactions on Cloud Systems (ToCS), European Alliance for Innovation (EAI), ISSN: 2410-6895

- Associate Editor, Journal of Next Generation Information Technology (JNIT), Convergence Information Society (CIS), ISSN: 2092-8637

- Associate Editor Journal of Advancements in Computing Technology (IJACT), Convergence Information Society (CIS), ISSN: 2005-8039

Proposed subjects:

1. Scheduling in datacenters. This research subject is oriented on near-optimal solutions for:

- In-Memory Asymptotic Scheduling for Big Data Platforms
- Trading off Availability for Cost in Dynamic Clouds
- Multi-Constraints Scientific Workflow Scheduling for Cloud Computing

Requirements: basic knowledge on queuing theory, optimization methods, algorithm design and implementation, statistics, parallel and distributed computing, advanced knowledge on concurrent programming, performance analysis.

2. *Data processing in Clouds*. This research subject is oriented advanced solutions for:

- Smart Data Driven e-Services
- Cloud-based Services for Water Resource Management
- Big Data Model for Water Resource Management
- Data collection and cleaning for smart cities platforms
- CloudWave – Content Gathering Network with Flying Clouds

Requirements: basic knowledge on parallel and distributed computing, advanced knowledge on concurrent programming, data modeling and manipulation languages, advanced knowledge on Cloud, performance analysis.

3. *Extreme-Scale Computing and Big Data Platforms*. This research subject considers the following approaches:

- Automatically Scaling Microservices Across Hybrid Clouds
- Multi-layer Peer to Peer Networks. Interoperability between different types of Peer to Peer overlays
- Trust Management in P2P Self-Organizing Overlays
- Automatic service provisioning in Big Data systems
- Making Sense of Big Data
- Security in Network chain services

Requirements: advanced knowledge on concurrent programming, scalability, fault tolerance, standardization and interoperability, security, performance analysis.

The PhD research will be hosted in *Innovative Services Laboratory for Smart, Digital and Collaborative Future Society (L18-PRECIS, Faculty of Automatic Control and Computers)*.
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Laboratory description: The laboratory provides the framework for research, case studies, technology development in the field of innovative services for intelligent, digital and collaborative future. Research topics:

- Large scale distributed systems (design and performance analysis)
- Services Platform for Cloud Computing and Grid Computing;
- Advanced management of resources in distributed systems;
- Edge Computing and scheduling in heterogeneous environments;
- Design and analysis of peer-to-peer systems;

- Trust management, reputation for data security
- Management, Big Data storage and processing, aggregation, data reduction, advanced analytical methods in real time;
- Solutions for the processing and storage of data in Smart Cities;
- Optimization methods (methods inspired by nature).

Services:

- Application Development and Cloud technology services;
- Simulation methods widely distributed systems;
- Algorithms adaptive planning and resource management;
- platforms and support services based on Cloud model for the collection and storage of data in heterogeneous environments;
- algorithms for decision support applications in Smart Cities;
- Services for time series prediction (data series);
- Support solutions to optimize resource consumption.

Products:

- Simulator - algorithms evaluation and planning methods;
- Packets extensive simulator Clouds: testing scalability, fault tolerance, adaptive algorithms;
- Platform for the collection and aggregation of data in Smart Cities: DataWay;
- Analysis tools for digital libraries (scientific publications).

Research infrastructure:

- Logistics infrastructure: workstations with access to Cloud platforms, installed with simulation tools, office equipment;
- Infrastructure software: development environments Cloud Platforms, Cloud applications.
- The Laboratory team includes teachers, researchers, collaborators and PhD students: prof. Valentin Cristea, prof. Mariana Mocanu, prof. Nirvana Popescu, prof. Decebal Popescu, prof. Ciprian Dobre, sl. Vlad Ciobanu, sl. Gavril Godza, As. Cristian Chilipirea, Dr. Cătălin Negru, Catalina Niță, Bogdan Mocanu, Claudia Ifrim, Mihaela-Andreea Vasile, Loredana-Marsilia Groza, Gabriel Apostol, George Iordache, Dragoș Ionica, Alexandru Tudorică, Dorin Palanciuc, Viorel Grigoraș, etc.