Alexandru-Adrian Tantar

Curriculum Vitæ

Date of birth: December 10, 1980
Nationality: Romanian

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Last Academic Position: **Research Associate**, Interdisciplinary Centre for Security, Reliability and Trust (SnT), University of Luxembourg, Luxembourg, April 1st, 2012 – March 31st, 2015; Green@Cloud project, extension of the GreenIT research axes.

Research Interests: optimization, stochastic and evolutionary algorithms, metaheuristics, adaptive mechanisms for evolutionary algorithms, rare event simulation and analysis, energy-efficient, high performance and high throughput computing, cloud computing, computational grids, parallel and distributed computing, protein structure prediction, molecular docking.

Academic Background and Education

2010-2012 ▹ **AFR – Marie Curie PostDoctoral Researcher**, Computer Science and Communications (CSC) Research Unit, University of Luxembourg, Luxembourg. Research conducted on holistic autonomic, energy-efficient solutions for managing, provisioning and administering the various resources of a Cloud Computing / HPC center.

2009-2010 ▹ **PostDoctoral Researcher** (October 2009 – March 2010), Advanced Learning Evolutionary Algorithms (ALEA) Team, INRIA Bordeaux – Sud–Ouest, Institut de Mathématiques de Bordeaux, France. Research topics: parallel and distributed techniques for interacting Markov chain based modeling and development, Monte Carlo methods (interacting Monte Carlo Markov Chains: i-MCMC).

The research I conducted while in the ALEA team was focused in the Bayesian Inference using Interacting Particles (BIIPS) internal project (initial specifications and design), and also made the object of several external collaborations, namely with the CEA CESTA (Atomic Energy Committee, France) for the optimization of a real-life, CEA hosted sparse antenna array, and with the IFREMER (Sea Research Institute, France) on rare event simulation for off-shore structures in extreme conditions.

2005-2009 ▹ **PhD in Computer Science**, DOLPHIN Project-Team, INRIA Lille – Nord Europe (French National Computer Science and Automatics Research Institute), LIFL/CNRS UMR 8022 (Fundamental Computer Science Laboratory), Université des Sciences et Technologies de Lille, France. Thesis: *Parallel Hybrid Metaheuristics for Molecular Docking on Computational Grids*. Advisors: Nouredine Melab, El-Ghazali Talbi (INRIA Lille, LIFL). Defended on the 4th of June, 2009.

Thesis Jury:

Hélène Touzet, *CNRS Senior Researcher*, Lille1 University, France
Thomas Stützle, *Senior Researcher*, Free Brussels University, Belgium

Pascal Bouvry, *Professor*, University of Luxembourg, Luxembourg
Albert Zomaya, *Professor*, University of Sydney, Australia
Dragos Horvath, *CNRS Senior Researcher*, University of Strasbourg, France
El-Ghazali Talbi, *Professor*, University of Lille 1, France
Nouredine Melab, *Professor*, University of Lille 1, France

▹ **Abstract**: The main research aspects addressed in my thesis concern protein structure prediction and molecular docking *in silico* approaches on computational grids. Molecular docking is of fundamental importance in understanding biomolecular processes, inhibitor design, etc. Due to the intrinsic relation between the structure of a molecule and its functionality, the problem implies important consequences in medicine and biology related fields. The *in silico* molecular docking problem combines three interrelated algorithmic components: a molecular complex representation model, conformational space exploration algorithmic mechanisms, and a scoring modulus for evaluating the potential solutions. While focusing on metaheuristics and evolutionary techniques, the main topics I considered also target parallel, distributed, hierarchical and hybrid approaches. As main aspects discussed within my thesis, the mathematical modeling and representation of molecular complexes were considered in a first step, followed by the design of distributed conformational sampling algorithms and, last, by an experimental validation of the developed algorithms on large scale computational grids.

To conclude with, the different directions I explored within my thesis led to the development of several approaches dedicated to parallel and distributed high performance computing, with different results on dynamic and adaptive mechanisms for evolutionary computation. All experiments were carried on Grid'5000, a nation-wide grid of, at the time when the thesis was written, almost 5000 computing cores (https://www.grid5000.fr).

2003-2005 ▹ **Master degree in Computer Science – Combinatorial Optimization**, "Al.I. Cuza" University, Iasi, Romania. Dissertation: *Framework for multi-criterion optimization using COIN-OR. Imperative modeling approach.* Advisors: El-Ghazali Talbi, Clarisse Dhaenens (DOLPHIN Team-Project, INRIA Lille – Nord Europe, LIFL UMR USTL/CNRS 8022, France). GPA: 9.83/10.

Courses: Parallel and Distributed Algorithms, Foundations of Combinatorial Optimization, Optimal Control of Systems with Distributed Parameter, Statistical Analysis of Experimental Algorithms, Special Topics of Algorithmics, Metaheuristics in Complex Systems Design and Verification, Advanced Programming Techniques, Fuzzy Theory in Optimization, Artificial Neural Networks in Optimization, Semantic Web.

1999-2003 ▹ **Bachelor of Science – Faculty of Computer Science**, "Al.I. Cuza" University, Iasi, Romania. Thesis: *Component Oriented Framework for Distributed Processing using (D)COM/COM+.* Advisor: Gheorghe Grigoras (Faculty of Computer Science, "Al.I. Cuza" University, Iasi, Romania). Graduation Mark: 9.91/10, third of ~200.

Other Professional / Academic Experience

2011 ▹ **Invited Professor (June-July) – CINVESTAV-IPN** (Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional), Mexico City, Mexico, in the context of a collaboration with Prof. Oliver Schütze and Prof. Carlos A. Coello Coello.

2009 ▹ **President, Founding Member and Promoter** of the Lille Nord de France IEEE Branch, gathering Computer Science PhD Students (INRIA Lille – Nord Europe, and the Fundamental Computer Science Laboratory of Lille), and PhD students affiliated with the Doctoral School of Engineering Science (EDSPI).

2006-2008 ▹ **Secretary (March 2007 – 2008), Founding Member and Communication Media Manager (2006 – March 2007) of TILDA** – Computer Science and Associated PhD Students of Lille (Thésards en Informatique de Lille et Docteurs Associés), http://tilda.univ-lille1.fr.

Awards

- Marie Curie – AFR/FNR Grant Award, Luxembourg (Aides à la Formation Recherche / Fonds National de la Recherche), 2010, Online Dynamic Multi-Objective Optimization for Interdependent Systems, Computer Science and Communications Research Unit, University of Luxembourg.

- INRIA "Explorateur" mobility grant, Computational Intelligence and Multi-Agent Games (SEN4) Research Group, Centrum Wiskunde & Informatica (CWI), Amsterdam, The Netherlands, October-December, 2008. Research conducted in collaboration with Prof. Han La Poutré and Dr. Peter A. Bosman.

Research Grants Participation and Collaborations

BIIPS

- **Bayesian Inference using Interacting Particle Systems** (BIIPS), INRIA funded ADT, INRIA Bordeaux – Sud-Ouest, Institut de Mathématique de Bordeaux, Bordeaux. The BIIPS ADT is focused on offering Bayesian interacting particle paradigms.

  Abstract: Bayesian inference is used to estimate conditional distributions given past observations and with respect to a set of unknown parameters. A large number of problems, e.g. unsupervised classification, clustering, filtering, etc., can be addressed in this framework under a common modeling approach. Emerged as a result of recent research studies, interacting particle algorithms proved to have superior performances when compared to classical Monte Carlo Markov Chain approaches. What is more, interacting particle algorithms are also well adapted for dynamic estimation problems, as often the case and encountered in, for example, filtering, tracking or classification.

IFREMER

- **Extreme Conditions Particle Based Simulation**, Advanced Learning Evolutionary Algorithms (ALEA) – INRIA Bordeaux – Sud-Ouest / IMB, and the French Sea Exploration Research Institute (IFREMER). The main axes explored as part of this project were aimed at: (i) providing a comprehensive overview of the existing particle-based rare event simulation algorithms, (ii) conducting a simulation based comparison of the developed algorithms, and (iii) offering a dedicated framework for the analysis of a particular process in extreme offshore conditions.

  Abstract: The analysis of interacting particle algorithms, as a central research area of ALEA, offers a strong support for error propagation and rare event simulation paradigms. With respect to offshore (extreme-conditions) structural development, interacting particle algorithms can be used to simulate different critical condition processes. As part of this project, a sequential Monte Carlo approach was proposed, where a set of potential solutions is refined in iterative manner as to allow the simulation of critical states. An advantage interacting particle algorithms have, and implicitly the proposed method, is that convergence, as opposed to Markov Chain Monte Carlo (MCMC), does not depend on long simulation stability conditions. A particular attention was given to the analysis of theoretical convergence and numerical performance.

CEA CESTA

- **Sparse Antenna Array Optimization**, French Atomic Energy Commission (CEA), project coordinated by Prof. Del Moral (Advanced Learning Evolutionary Algorithms, INRIA Bordeaux – Sud-Ouest / IMB) and Pierre Minvielle (CEA CESTA, Le Barp). External collaboration as a member of the Advanced Learning Evolutionary Algorithms (ALEA) Team, offering support for the design and analysis of different evolutionary algorithms. A significant improvement was attained over the results previously obtained by the CEA, superseding the initial cross-entropy based CEA approach.

  Abstract: Sparse antenna arrays are a topic of high interest in the electromagnetic measurement domain, communications, etc. From a formal point of view, the optimization of a sparse antenna array, with respect to various constraints, can be modelled over a set of continuous functions that describe directivity, lobes, etc. Nonetheless, as a result of the non-convex and highly multi-modal nature of these functions, classical algorithms are generally ineffective. After a first Kullback-Leibler cross-entropy based algorithm developed at the CEA, an evolutionary computation design was later developed, with a significant improvement of the results.

Green@Cloud

- Main contributor of the proposal, sent to and accepted by the Fonds National de la Recherche, Luxembourg (FNR – http://www.fnr.lu), with a total of 1,088,440 EUR project costs (University of Luxembourg and FNR participation for an amount of 387,000 EUR). The project, besides PI related costs, covers the financing (partial or complete, depending on each specific position) of two Scientific Collaborators, three Research Associates, and two PhD students.

  Abstract: Green@Cloud aims at developing an energy-aware scheduling framework for large-scale distributed systems (data centers, clouds, grids). The main directions of the project include (i) multi-criteria mathematical optimization models (e.g. makespan, energy, robustness), and (ii) multi-objective optimization methods for energy-efficient computing. A set of fault-tolerant and robust scheduling paradigms for virtual machines running in a dynamic environment is expected to be built, also relying on machine learning techniques. Different time-varying, deterministic and/or stochastic factors can be captured via the (implicit) model terms, e.g. renewable energy supply, computational demand or activity of users. Experimentation and validation to be carried on a real test bed using large-scale computing resources, e.g. Grid'5000 / Amazon EC2.

SuperNodeII

- Main contributor of the proposal on the modeling, learning and anticipation component (in addition to a second part that deals with scheduling algorithms), project sustained and approved by the Ministry of the Economy and Foreign Trade (Ministère de l'Économie et du Commerce Extérieur, Gouvernement du Grand-Duché de Luxembourg), and the Aides à la Formation Recherche (AFR) / Fonds National de la Recherche (FNR), Luxembourg. The grant covers the financing of one doctoral student. Project carried in collaboration with the MixVoIP Smart VoIP Solutions provider.

  Abstract: The project is expected to offer an in-depth understanding and analysis of different predictive algorithms; a particular attention is given to estimating the incoming traffic load, as to provide a paradigm tailored for VoIP systems. While a set of (signal processing infrastructure) solutions are currently in use at MixVoiP, these solutions are rather monolithic. A direct disadvantage is the incapacity to fit the new cloud environments available on the market, given that no dynamic scaling mechanism is included.

EvoPerf

- Proactive contribution in defining the leading lines of the project. Interdisciplinary project set on a three years collaboration basis among the Computer Science and Communications Research Unit, Prof. Pascal Bouvry's team, University of Luxembourg, and the Advanced Learning Evolutionary Algorithms (ALEA) team led by Prof. Pierre Del Moral, INRIA Bordeaux – Sud-Ouest, France.

  Abstract: Evoperf aims to provide a basis for robust and performance guaranteed evolutionary computation. Evoperf is defined as an interdisciplinary research project with applications in biomedicine.

GreenIT

- **Energy-efficient Resource Allocation in Autonomic Cloud Computing**, Computer Science and Communications Research Unit, University of Luxembourg, Luxembourg. The aim of the project is to provide a holistic, autonomic, energy-efficient solution to manage, provision and administer the various resources of a cloud.

  Abstract: With a more than 100-fold expansion of the operating frequency and number of processors over the past fifteen years, and with a more than 1000-fold supercomputing power increase, consumption and heat dissipation impose important design limitations. The Japanese Earth Simulator (35.61 Teraflops, ranked first in Top500 from 2001 to 2004) resulted in approximately 10 million US$ per year in operation costs. At the same time, the first ranked supercomputer in Top500 (July 2009), the DOE/NNSA/LANL 100 million US$ BladeCenter QS22/LS21 Cluster (12960 PowerXCell 8i 3.2 Ghz, 6948 AMD Opteron DC 1.8 GHz cores, 1.105 Petaflops), was estimated to require 3.9 MW while delivering 444.94 Mflops/Watt. As a consequence, given the nowadays economic, scalability, and environmental issues faced by high-end super-computing facilities, data centers and clouds, aggressive energy efficient solutions are needed.

Carbon Neutral ICT

▹ **Carbon-Neutral ICT Operations at the University of Luxembourg**, Luxembourg. This interdisciplinary project aims at providing solutions for a carbon-free environment at the Belval Campus. The project consists of three main packages: (i) a business model for managing the renewable energy provided by photovoltaic sources, (ii) reducing energy consumption for the ICT equipment and operations, and (iii) a monitoring system for the ICT-driven energy consumption.

Abstract: The Green IT project looks at, among others, ways of reducing the ICT energy consumption via resource management and optimization. The main goal is to provide solutions and tools that are capable of self-adaptation in a dynamic computing environment where different stochastic sources are present. Carbon-Neutral ICT follows similar lines while coming with a wider perspective. The challenging nature of the problem comes from its multi-objective, dynamic definition.

ANR Dock

▹ **Docking@GRID – Conformational Sampling and Docking on Computational Grids**, French National Research Agency (*Agence Nationale de la Recherche*). Project coordinator: Prof.TALBI El-Ghazali, LIFL (Laboratoire d'Informatique Fondamentale de Lille), INRIA Lille – Nord Europe. Project partners:

- **LIFL (USTL – CNRS – INRIA)**: Fundamental Computer Science Laboratory, Lille (*Laboratoire d'Informatique Fondamentale de Lille*)
- **IBL (CNRS – INSERM)** – Biology Institute of Lille
- **CEA** – Life Sciences Division (*Direction des Sciences du Vivant*) / iRTSV – Grenoble (CMBA and BIM – IACG team)

Abstract: Molecular modeling and, to a higher level, conformational sampling and docking, represent powerful tools capable of offering an insight over the interaction mechanisms of (macro)molecules which stand as the basis of physiological processes.

Beyond the immediate interest of being able to computationally predict complexed molecular conformations which act, for example, as regulators inside the living cells, this approach can be equally used for *"in silico"* search of means to intervene in physiological or pathological processes – rational drug development. Nevertheless, combinatorial processes have to be simulated and thus strong limitations are imposed. Hence, the thee imperatives of current molecular modeling research: (i) finding maximal simplicity mathematical models that are capable to offer an accurate description of molecular interactions, (ii) designing efficient distributed optimization algorithms, and (iii) deploying the developed algorithms on computational grids.

Dedicated page: http://dockinggrid.gforge.inria.fr

ANR CHOC

▹ **CHallenge en Optimisation Combinatoire**, French National Research Agency (*Agence Nationale de la Recherche*). Project coordinator: Bertrand Le Cun, PRiSM, University of Versailles and G-SCOP, INPG, Grenoble. Project partners:

- **OPALE Team – PRiSM**, University of Versailles and G-SCOP, INPG, Grenoble.
- **MOAIS – ID, IMAG**, Grenoble University
- **DOLPHIN Project Team**, Lille University

Abstract: The main challenge of the project consists in solving two well-known difficult problems of the Combinatorial Optimization field: the Quadratic Assignment Problem (QAP) and its three-dimensional extension, the Q3AP. The goal of the project is to go as far as possible in solving in exact manner the aforementioned problems, as well as to improve the best-known solutions of still unsolved instances. The study also considers the connection between the Bob++ Branch-and-Bound (B&B) library (Versailles), Kaapi (Grenoble), and the ParadisEO (Lille) frameworks. Kaapi supports automatic fine-grain scheduling and dynamic loading/discarding of resources whilst ParadisEO offers the means for easily constructing parallel and distributed metaheuristics.

Dedicated page: http://choc.prism.uvsq.fr

Scientific Service

Invited Speaker

- **Evolutionary Computation in Practice**, Genetic and evolutionary computation (GECCO '14), July 12-16, 2014, Vancouver, BC, Canada, http://www.sigevo.org/gecco-2014/ecp.html.

- **Doctoral Summer School on Evolutionary Computing in Optimisation and Data Mining (ECODAM)**, June 24-27, 2014, Iasi, Romania.

  The 2014 ECODAM edition was dedicated to John Horton Conway which was awarded the title of Doctor Honoris Causa of the "A.I. Cuza" University, Iasi, Romania.

  Other invited talks were given by John Horton Conway (Princeton University), Sorin Istrail (Brown University), Dan Simovici (University of Massachusetts), Emilia Tantar (University of Luxmebourg) and Daniela Zaharie (West University, Romania), http://profs.info.uaic.ro/ summerschool.

Committees

- **Luxembourg's National Coordinator for the FuturICT FET Flagship Initiative (University of Luxembourg)** – `http://www.futurict.eu` (November 2011), gathering several academic institutions, research, business and industrial partners from all over Europe (external hubs in Latin America, Israel and Japan) in a 10 years, 1 billion EUR program to explore social life on earth and everything it relates to.

- Designated expert by the CSC/University of Luxembourg for the *Formation des Ingénieurs*, *Université Grand Région: Saarland, Liège, Luxembourg, Lorraine (Metz & Nancy), Kaiserslautern and Trier Universities* – `http://www.uni-gr.eu`. November 9, 2010, Arlon University Campus, Liège, Belgium. Actively involved in the elaboration of a common master structure, proposal included as part of the final format adopted by the UGR Universities.

- One of the *representatives of the University of Luxembourg for the University of the Greater Region (UGR) official delegation* that visited Bucharest and Sofia on October 25-26, 2011. The encounters had as purpose to establish common agreements between the UGR and top-ranked universities in Romania, respectively Bulgaria. The delegation included all the presidents and rectors of the UGR Universities as well as vice-presidents, researchers and international relations staff from UGR. `http://www.uni-gr.eu/en/about-us/international/bulgarien-und-rumaenien.html`.

- **Member of the Jury and Chair of the FlowShop Contest Organizing Committee**, *3rd GRID Plugtests CoreGRID Conference*, November 30, 2006, Sophia Antipolis, Nice, France, `http://www-sop.inria.fr/oasis/plugtest2006`.

- **IEEE Computational Intelligence Society (CIS) Webinars Subcommittee**, `http://cis.ieee.org`, `http://cis.ieee.org/webinars.html`.

- **IEEE Computational Intelligence For Cloud Computing Administrative and Communication Committee** – IEEE Computational Intelligence for Cloud Computing has as objective to promote the application of CI techniques to cloud computing by organizing academic activities, such as special sessions, workshops, tutorials, journal special issues at IEEE CIS conferences (CEC, WCCI, SCCI) or journals (IEEE TEC or IEEE CI Magazine), `http://oldon.uni.lu/ieeetf`.

- **Editorial Board of the American Journal of Algorithms and Computing, Associate Editor**, `http://uscip.org/JournalsDetail.aspx?journalID=50`.

Founder & Co-Chair

- **EVOLVE 2014 International Conference – A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computing**. July 1-4, 2014. Beijing, China, `http://www.evolve-conference.org`.

- **EVOLVE 2013 International Conference – A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computing**. July 11-13, 2013. Leiden, The Netherlands, `http://evolve2013.liacs.nl`.

- *EVOLVE 2012 International Conference – A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computing.* August 07-09, 2012. Mexico City, México, `http://evolve.cinvestav.mx`.

- *EVOLVE 2011 International Workshop – A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computing.* Workshop aiming to unify theory-inspired methods and cutting-edge techniques developed by practitioners as to identify new common and challenging research aspects. May 25-27, 2011. Bourglinster Castle, Luxembourg, `http://evolve.uni.lu`.

- *Evolutionary Algorithms – Challenges in Theory and Practice.* Workshop aiming to offer a common discussion ground for the theoretical and practical aspects of evolutionary algorithms. March 29, 2010, Bordeaux, France, `http://alea.bordeaux.inria.fr/index.php/component/content/article/34`.

- *Green and Efficient Energy Applications of Genetic and Evolutionary Computation (GreenGEC), **GECCO 2014** (Genetic and Evolutionary Computation Conference).* July 12-16, 2014. Vancouver, BC, Canada, `http://www.sigevo.org/gecco-2014/workshops.html`.

- *Green and Efficient Energy Applications of Genetic and Evolutionary Computation (GreenGEC), **GECCO 2013** (Genetic and Evolutionary Computation Conference).* July 06-10, 2013. Amsterdam, The Netherlands, `http://www.sigevo.org/gecco-2013/workshops.html`.

- *Green and Efficient Energy Applications of Genetic and Evolutionary Computation (GreenGEC), **GECCO 2012** (Genetic and Evolutionary Computation Conference).* July 07-11, 2012. Philadelphia, USA, `http://greengec2012.uni.lu`.

- *GreenIT Evolutionary Computation, **GECCO 2011** (Genetic and Evolutionary Computation Conference).* The aim of this workshop is to bring together researchers interested in addressing challenging issues related to the use of evolutionary computation for power consumption optimization in large-scale and distributed computing systems. July 12-16, 2011. Dublin, Ireland, `http://www.sigevo.org/gecco-2011/workshops.html#giec`.

- *IEEE Lille Nord de France Branch*, founding member and president. Association including PhD Students in computer science (INRIA Lille – Nord Europe, Lille Laboratory of Fundamental Computer Science, LIFL) and Doctoral School of Engineering Science (EDSPI) affiliated PhD Students.

- *Computer Science and Associated PhD Students of Lille (Thésards en Informatique de Lille et Docteurs Associés, TILDA).* Founding and active directory board member (2006-2008), `http://tilda.univ-lille1.fr/?page_id=19`.

Organizing Committee

- **Co-Organizer**, *Rare Events Simulation Workshop (RES 2010).* Workshop offering an extensive insight of the rare event simulation and analysis domain, with topics varying from fundamental to application oriented aspects. October 28-29, 2010, Bordeaux, France, `http://alea.bordeaux.inria.fr/index.php/conferences/rareeventsworkshop`.

- **Co-Chair of the Organizing Committee**, *EuroDocInfo'08 (Journées Franco-Belges EuroDocInfo'08 – European Doctoral School on Computer Science)*, January 23-24, 2008, Lille, France, `http://www.lifl.fr/eurodocinfo08`.

- *JOBIM 2008 (Journées Ouvertes Biologie Informatique Mathématique)*, June 30 – July 2, 2008, Lille, France, `http://www.lifl.fr/jobim2008`.

- **Chair of the FlowShop Contest Organizing Committee**, *4th GRID Plugtests CoreGRID Conference*, October 28 – November 1, 2007, Beijing, China, `http://echogrid.ercim.org`, `http://www.etsi.org/plugtests/grid/GRID.htm`.

- *Meta'06, Design and Deployment of Parallel Metaheuristics (Parallélisation de métaheuristiques à la conception et à l'exécution)*, November 2-4, 2006, Hammamet, Tunisia, `http://www.lifl.fr/META2006/Formation.html`.

- *Training on Grid5000 Environment and Software – Lille (Premiéres Journées Grid5000 à Lille – Formation pratique aux outils logiciels de Grid5000): grid environment, deployment and execution*, October 30-31, 2006, Lille, France, http://www.lifl.fr/~melab/RECH/JourneesGrid5000Lille/journeesGrid5000LIlle.htm.

- *7th ROADEF Congress (7éme congrès de la ROADEF, Société Fran caise de Recherche Opérationnelle et d'Aide à la Décision)* ~450 participants, February 6-8, 2006, Lille, France, http://www.lifl.fr/ROADEF2006.

Program Committees

- **2014 IEEE Congress on Evolutionary Computation (CEC) – Technical Program Committee**, July 6-11, 2014, Beijing, China, http://www.ieee-wcci2014.org.

- **3rd International Conference on Smart Grids and Green IT Systems** (**SMARTGREENS**), Barcelona, Spain, 4 – 5 April, 2014, http://www.smartgreens.org/home.aspx?y=2014.

- **2013 IEEE Congress on Evolutionary Computation (CEC) – Technical Program Committee**, June 20-23, 2013, Cancun, Mexico, http://www.cec2013.org.

- **2013 IEEE Symposium Series on Computational Intelligence (SSCI)**, Singapore, April 16-19, 2013, http://www.ieee-ssci.org.

- **2nd International Conference on Smart Grids and Green IT Systems** (**SMARTGREENS**), Aachen, Germany, 9 – 10 May, 2013, http://www.smartgreens.org.

- **1st International Conference on Smart Grids and Green IT Systems** (**SMARTGREENS**), held in conjunction with CSEDU 2012, WEBIST 2012 and CLOSER 2012, Porto, Portugal, 19 – 20 April, 2012, http://www.smartgreens.org/ProgramCommittee.aspx?y=2012.

- **26th European Conference on Modelling and Simulation 2012** (**ECMS'12**), **High Performance Modelling and Simulation** (**HiPMOS**), Koblenz-Landau University, Germany, May 29th – July 1st, 2012, http://www.scs-europe.net/conf/ecms2012/committee.html.

- **GECCO-UP 2012 – Understanding Problems Workshop, Genetic and Evolutionary Computation Conference (GECCO)**, http://people.exeter.ac.uk/km314/gecco-up.

- **8th IEEE International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE 2011)**, Mérida, Yucatán, Mexico, October 26-28, 2011, http://www.ieee.org/conferences_events/conferences/conferencedetails/index.html?Conf_ID=19270.

- **11th IEEE International Conference on Scalable Computing and Communications (SCALCOM 2011), Scalable Solutions for GreenIT Workshop (SCALSOL)**, in conjunction with the 11th International Conference on Computer and Information Technology (CIT 2011), Pafos, Cyprus, http://www.ieee.org/conferences_events/conferences/conferencedetails/index.html?Conf_ID=19167.

- **6th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC 2011), Global Optimization in Large-Scale Distributed Systems**, in conjunction with the BWCCA-2011 International Conference, October 26-28, 2011, Barcelona, Spain, http://www.lsi.upc.edu/~net4all/3PGCIC-2011/committees.html.

- **11th International Conference on Hybrid Intelligent Systems (HIS 2011)**, http://www.mirlabs.org/his11.

Reviewer

- **Information Sciences (INS), Elsevier**, Informatics and Computer Science, Intelligent Systems Applications, http://www.journals.elsevier.com/information-sciences.

- **Computers & Operations Research (COR), Elsevier**, http://www.journals.elsevier.com/computers-and-operations-research.

- **Journal of Parallel and Distributed Computing (JPDC), Elsevier**, http://www.journals.elsevier.com/journal-of-parallel-and-distributed-computing.
- **IEEE Transactions on Parallel and Distributed Systems (TPDS), IEEE Computer Society**, http://www.computer.org/portal/web/tpds.
- **Soft Computing, Springer**, A Fusion of Foundations, Methodologies and Applications, http://www.springer.com/engineering/computational+intelligence+and+complexity/journal/500.
- **Cluster Computing, Springer**, The Journal of Networks, Software Tools and Applications, http://www.springer.com/computer/communication+networks/journal/10586.
- **Natural Computing, Springer**, http://www.springer.com/computer/theoretical+computer+science/journal/11047.
- **Journal of Computer Science and Technology (JCST), Springer**, http://www.springer.com/computer/journal/11390.
- **Journal of Mathematical Modelling and Algorithms (JMMA), Springer**
  Special Issue on Recent Developments in Bioinspired Algorithms, http://www.springer.com/mathematics/applications/journal/10852.

Workgroup Coordination

- **November 2010 – December 2012**, Co-responsible of the *GRIPHON Working Group (Grids, Parallel Computing, Ad-Hoc Networks and Optimization)*. Weekly event organized inside Prof. Pascal Bouvry's Team and regrouping the members of the team along with presentations given by invited researchers. Computer Science and Communications Research Unit, FSTC, University of Luxembourg, Luxembourg, http://griphon.uni.lu.
- **September 2009 – March 2010**, Co-responsible of the *Advanced Learning and Evolutionary Algorithms (ALEA) Working Group*, held every Thursday from 14h00, at the Institut de Mathématiques de Bordeaux (IMB). The ALEA Working Group serves as a forum for the ALEA Team members and invited researchers. The event stands as a common ground for the group members and the invited speakers to present their ongoing research, interact and exchange knowledge. Each session is focused on the discussion and peer review of current and future projects, related aspects and incentive research topics. The event provides a regular schedule of presentations covering but not being restricted to ALEA's research themes. https://alea.bordeaux.inria.fr/index.php/working-groups.

External Reviewer

- **IEEE World Congress on Computational Intelligence (WCCI), 2012**
- **12th International Conference on Parallel Problem Solving From Nature (PPSN), 2012**
- **25th IEEE/ACM International Parallel & Distributed Processing Symposium (IPDPS), 2011**
  – Parallel Computing and Optimization (PCO)
  – Nature Inspired Distributed Computing (NIDISC)
- **International Conference on Evolutionary Computation Theory and Applications (ECTA), 2011**
- **6th European Conference on Intelligent Systems and Technologies (ECIT), 2010**
- **International Conference on Evolutionary Computation (ICEC), 2010**
- **Conferencia Latino Americana de Computación de Alto Rendimiento (CLCAR), 2010**
- **11th International Conference on Parallel Problem Solving from Nature (PPSN), 2010**
- **IEEE Congress on Evolutionary Computation (CEC), 2009**
- **7th International Symposium on Parallel and Distributed Computing (ISPDC), 2008**

- **High Performance Computing & Simulation (HPCS), 2008**
- **6th International Symposium on Parallel and Distributed Computing (ISPDC), 2007**
- **Genetic and Evolutionary Computation Conference (GECCO), 2007**

Supervision of Research Activity

PhD Student Supervision

- **Anh Quan Nguyen**, *Energy-Efficient Cloud Computing*, Interdisciplinary Centre for Security, Reliability and Trust (SnT), University of Luxembourg (on a daily basis supervision, *Multi-Objective Metaheuristics for Energy-Aware Scheduling in Cloud Computing Systems, Green@Cloud* FNR project). Research on modelling of large-scale data centers and cloud computing infrastructures, virtualization, evolutionary algorithms, rare event simulation and error propagation analysis. Started on January 15, 2013.
- **Ana-Maria Simionovici**, *Dynamic MixVoIP (DYMO)*, Computer Science and Communications (CSC) Research Unit, University of Luxembourg (on a daily basis supervision, part of the Super Node II MixVoIP project). Research on optimization, learning and anticipation, virtualization, evolutionary algorithms, particle algorithms. Started on November 1st, 2012.

Internship

- **Optimisation Dynamique Multi-Objectif dans les Nuages**, internship carried by Maxence Delorme as an *Assistant Ingénieur* at the Interdisciplinary Centre for Security, Reliability and Trust (SnT), University of Luxembourg. Final year project, Département Génie Informatique et Statistique, Polytech Lille, Université Lille 1, March-June 2012.

Master

- **Learning and Anticipation Techniques**, part of the *Carbon-neutral ICT Operations at the University of Luxembourg*, Cristina Ghet and Diana Marosin, 1^{st} year Master in Information and Computer Science, University of Luxembourg – project supervised in collaboration with Dr. Emilia Tantar, March-June 2011.
- **Dynamic Sustainability Procedures**, part of the *Carbon-neutral ICT Operations at the University of Luxembourg*, Mària Svorenova and Reyhan Yilmaz, 1^{st} year Master in Information and Computer Science, University of Luxembourg – project supervised in collaboration with Dr. Emilia Tantar, March-June 2011.
- **Benchmarks for Dynamic Multi-Objective Optimization Problems**, Masoud Tabatabei and Vaishnavi Rejendra, 1^{st} year Master in Information and Computer Science, University of Luxembourg – project supervised in collaboration with Dr. Emilia Tantar, March-June 2011.
- **Predicting the Quality of Voice over WLAN Using Data mining**, Master thesis research internship, Parinya Panyato, 2^{nd} year Master of Science Information Technology, University of Luxembourg, from King Mongkut's University of Technology Thonburi, Thailand. Project supervised in collaboration with Assoc. Prof. Dr. Kittichai Lavangnananda (KMUTT) and Prof. Pascal Bouvry (University of Luxembourg), March-April 2011 (full-time).
- **Dynamic Packet-size Optimization in MPEG Audio Streaming over Wireless LAN**, Master thesis research internship, Chinnapong Angsuchotmetee, 2^{nd} year Master of Science Information Technology, University of Luxembourg, from King Mongkut's University of Technology Thonburi, Thailand. Project supervised in collaboration with Dr. Emilia Tantar, March-April 2011 (full-time).
- **Protein Structure Prediction and Molecular Docking (Prédiction de Structure de Protéines et Docking Moléculaire)**, final year project, Samir Zai and Antonin Mora, 2^{nd} year Master Pro TIIR, Sciences and Technology University of Lille (Université des Sciences et Technologies de Lille) – project conducted and supervised in collaboration with Prof. Nouredine Melab. The project, which I assured in a 80% proportion, aimed at providing large-scale massive data transfer support, extremely important in large screening experiments where huge databases of conformers or ligands have to be deployed over a grid. Different data flooding approaches where considered, experimented and analyzed, iterating over pipe-line and tree diffusion models.

Bachelor

- **Remote Execution Control**, final year project, Catalina Barbu and Felix Vatuiu, $3^{rd}year$, Faculty of Computer Science, "Al.I. Cuza" University, Iasi, Romania. Full responsibility of the project. The topics addressed were mainly directed on .NET primitives capable of supporting the remote control of a specific application. Different implications result in parallel computing where a master application can be used to supervise remote distributed tasks. Additionally, lightweight clients can be constructed where background computationally demanding services are hosted on remote servers or clusters.

Dissemination of Scientific Knowledge

Tutorials

- Alexandru-Adrian Tantar and Emilia Tantar, Green Evolutionary Computing for Sustainable Environments, 2012 IEEE World Congress on Computational Intelligence (WCCI), June 10-15, 2012, Brisbane, Australia, http://www.ieee-wcci2012.org/ieee-wcci2012/index.php?option=com_content&view=article&id=67.
- Alexandru-Adrian Tantar and Emilia Tantar, Green Evolutionary Computing for Sustainable Environments Revisited, 2013, EVOLVE International Conference – A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computing, July 11-13, 2013. Leiden, The Netherlands, http://evolve2013.liacs.nl.

Talks

- **Alexandru-Adrian Tantar**, Energy-efficient Resource Allocation in Autonomic Cloud Computing, Ending, Computer Science and Communications (CSC) Seminar / FSTC, University of Luxembourg, Luxembourg, November 22, 2012.
- **Alexandru-Adrian Tantar**, From Rare Events Simulation to Optimization, CINVESTAV-IPN Seminario Departamental, Mexico City, Mexico, June 29, 2011.
- **Alexandru-Adrian Tantar**, Optimization and Parallel Computing for Conformational Sampling, Computer Science and Communication – Luxembourg Centre for Systems Biomedicine (CSC-LCSB) Workshop, Schengen, Luxembourg, January 10-11, 2011.
- **Alexandru-Adrian Tantar**, Dynamic Energy-Efficient Optimization, Computer Science and Communications (CSC) Seminar / FSTC, University of Luxembourg, Luxembourg, October 18, 2011.
- **Alexandru-Adrian Tantar**, Energy Efficient Computing – Dynamic Energy Efficient Computing in Stochastic Environments using Simulation and Anticipation, Computer Science and Communications (CSC) Seminar / FSTC, University of Luxembourg, Luxembourg, October 18, 2010.
- **Alexandru-Adrian Tantar**, Applications of Evolutionary and Stochastic Algorithms, Computer Science and Communications (CSC) Seminar / FSTC, University of Luxembourg, Luxembourg, May 4, 2010.
- **Alexandru-Adrian Tantar**, Parallel Evolutionary Algorithms, 20eme Journées Évolutionnaire Trimestrielles (JET) INRIA, Université Pierre et Marie Curie, Paris, March 26, 2010.
- **Alexandru-Adrian Tantar**, Algorithmes repartis à haute performance sur grilles de calcul, Digits, Architectures et Logiciels Informatiques (DALI) Team Seminar, University of Perpignan, Perpignan, France, April 6, 2010.
- **Alexandru-Adrian Tantar**, Parallel Evolutionary Algorithms for Conformational Sampling – ParadisEO-PEO, Molecular Modeling Group, European Institute of Chemistry and Biology, Bordeaux, France, 17 November 2009.
- **Alexandru-Adrian Tantar**, Advanced Evolutionary Algorithms for Protein Structure Prediction and Molecular Docking, Advanced Learning Evolutionary Algorithms (ALEA) Working Group, Institut de Mathématique de Bordeaux, Bordeaux, France, 15 October 2009.
- **Alexandru-Adrian Tantar**, Conformational Sampling on Grids – Protein Structure Prediction and Molecular Docking, SEN4 CWI Invited Seminar, Centrum Wiskunde & Informatica, Amsterdam, The Netherlands, 10 October 2008.

- **Alexandru-Adrian Tantar**, Docking@GRID – Parallel and Distributed Metaheuristics for Molecular Docking, PPF BioInfo, LIFL, June 11, 2008, Lille, France.
- **Alexandru-Adrian Tantar**, EuroDocInfo'08 – European Doctoral School on Computer Science, Molecular Docking and Protein Structure Prediction on Grids, January 23-24, Lille, France.
- **Alexandru-Adrian Tantar, Nouredine Melab, El-Ghazali Talbi**, Software framework for parallel and distributed metaheuristics, 22nd European Conference on Operational Research (EURO XXII), page 45, July 8-11, 2007, Prague, Czech Republic.
- **Alexandru-Adrian Tantar**, Docking@GRID – Conformational Sampling and Docking on Grids, PPF BioInfo, Polytech Lille, June 18, 2007, Lille, France.
- **Alexandru-Adrian Tantar**, Advanced Data Structures. StudIT (Students Communications Sessions), Timisoara, March 26-28, 2004, West University Timisoara.
- **Alexandru-Adrian Tantar, Cornel Barna**, Using advanced COM+/DCOM technologies, Microsoft Sessions, November 2003, Iasi, Romania.

Projects

- The *main contributor and developer of the ParadisEO-PEO* module, ParadisEO framework (http://paradiseo.gforge.inria.fr – parallel evolutionary framework for metaheuristics), initially developed by Sébastien Cahon. Introduced several new generic, essential components rendering the framework more flexible and capable of supporting parallelization of user defined arbitrary components, generic data transfer, multiple topologies, etc.
- ParadisEO + Globus Toolkit (http://www.globus.org) – coupling of the ParadisEO framework with the Globus Toolkit in order to make possible the large scale deployment of algorithms. Experimentations carried out on the Grid'5000 computational grid (https://www.grid5000.fr). Debian based software image including the two frameworks available on the ParadisEO's SVN.
- ParadisEO + MPICH-VMI (http://vmi.ncsa.uiuc.edu) – several tests performed on Grid'5000 by employing MPICH-VMI, the largest active deployment performed to date including almost 1000 processing cores and six administrative domains.
- Developed and tested multiple *system images for Grid'5000* including the Globus Toolkit, the ParadisEO framework and different MPI distributions (MPICH2, MPICH-G2, Open-MPI, MPICH-VMI) – extension of configuration and deployment bash scripts initially developed by Christophe Demarey.
- *AutoDock (http://autodock.scripps.edu) + ParadisEO* – parallelization of AutoDock by combining the two frameworks. Employed the generic components introduced in ParadisEO for designing several parallel algorithms based on the sequential ones already existing in AutoDock. New components designed and introduced in the framework. Extended the existing local search operators by including numerical first and second derivatives based ones, multiple diversification and intensification operators – joint work with Dr. Jorge Tavares.

Teaching

2011

- **Doctoral School in Computer Science and Communications (CSC), University of Luxembourg – Enabling Parallelism in Stochastic, Evolutionary and Particle Algorithms**, lectures on **Advanced Optimization Techniques** (Feb. – March, 2011) – full responsibility, together with Dr. Emilia Tantar, for the content, topics and organization of the lectures. With the support and participation of Prof. Pierre Del Moral and Dr. Emilia Tantar, the lectures covered aspects that ranged from theoretical grounds to practical issues in stochastic optimization techniques, distributed optimization and multi-objective optimization. The audience included PhD students in computer science, mathematics and engineering, from the University of Luxembourg, but also from the University of the Greater Region (UGR), i.e. Saarland University, University of Liège, University of Luxembourg, Lorraine Universities (Metz and Nancy), University of Kaiserslautern and the University of Trier.

2011-2012

- Lectures on *Basics of Intelligent and Adaptive Systems*, Faculty of Science, Technology and Communication, University of Luxembourg. Joint lectures with Dr. Emilia Tantar, Dr. Marija Slavkovik (2011) and Prof. Van Der Torre. Full responsibility for the learning and classification module (decision trees, artificial neural networks, etc.), including course materials and final examination.

2008-2009

- **System Development and Programming**, UFR IEEA (FIL) – full responsibility, i.e. lectures, developing and preparing course materials, seminar and practical activity, final evaluation. Linux/Unix system programming in-depth aspects having as target students already familiarized to C/C++ programming and fundamental algorithms. Main topics concern the Linux operating system: shell, file system, input/output operations, processes, signals and synchronization, parallel programming, etc.

- **Reinforced Machine Learning**, 2^{nd} year Master Info, UFR IEEA (FIL), with Prof. Fran cois De Comite – specification of the seminar and practical work subjects, involved in the final evaluation of the module. Analysis of learning paradigms focusing on three main classes of algorithms: (1) decision trees – fundamentals, entropy related notions, practical aspects and implementation, advantages and drawbacks, (2) neural networks – basic training algorithms, back-propagation and gradient algorithms, analysis and (3) Bayesian learning – comparison with the previously seen algorithms.

2007-2009

- **Grid Computing**, 2^{nd} year Master Pro TIIR, UFR IEEA (FIL), with Prof. Nouredine Melab – involved in preparing the course materials, specification of practical work topics, Grid'5000 oriented. I also developed a Globus Toolkit Grid'5000 software image still used at Lille for teaching purposes, MPI examples and code. *Second year in France when Grid'5000 has been made available for public teaching activities – course held in Lille and Toulouse only.* Hands-on training on computational grids, parallel and distributed computing, security notions. The basic notions laying the foundations of a computational grids are presented, having as practical example Grid'5000 (`https://www.grid5000.fr`): hardware and software architecture, scheduling, etc.

2005-2009

- **Web Technologies**, 2^{nd} year, UFR IEEA (FIL) – Computer Science, with Prof. Bruno Bogaert (second semester of each year) – seminar materials preparation, final project evaluation and hands-on development using HTML/XHTML, CSS, PHP and MySQL. Document Object Model – DOM, syntax and differences between HTML and XHTML/XML, JavaScript, style sheets, client and server side dynamic content generation, relational databases, etc.

- **Unix Shell and C Programming**, 3^{rd} year, TELECOM Lille 1 (ENIC), with Jean-Philipe Vandeborre – responsible for teaching the laboratory component class and involved in the final evaluation of the module. Intensive programming introduction – Linux/Unix primitives and commands, file systems, data manipulation and processing, etc.

2006-2007

- **Data Structures and Algorithms**, 2^{nd} year, Technological Institute of Lille (IUT "A", Lille1) with Prof. Annie-Fran coise Mouyart – seminaries and practical work on implementing and using trees, queues, stacks, etc. Detailed presentation of fundamental data structures with practical examples of use and algorithm implementations. Java based programming.

- **Computer Programming**, 1^{st} year, UFR IEEA (FIL) – Computer Science, with Prof. Éric Wegrzynowski – tutoring students in learning the basics of computer programming (PASCAL) and Linux operating systems. The basics of operating systems are presented, step by step training on using and manipulating the resources offered by the Linux system with an introduction to the basic notions of imperative programming, algorithms and data structures in Pascal.

2005-2006

- **Object Oriented Design**, 1^{st} year, Technological Institute of Lille (IUT "A", Lille1), with Sébastien Picault – concepts of object oriented programming and design in Java: inheritance, polymorphism, abstract and generic objects. Intervened for the practical part of the module.

2004-2005

- **Computer Programming in C**, 1^{st} year, Faculty of Computer Science, "Al.I. Cuza" University, Romania, with Prof. Dorel Lucanu and Prof. Gheorghe Grigoras – full responsibility for the formulation of the seminar lecture notes and practical laboratory activity; involved in the final evaluation process. Initiation to the C programming language, basic concepts of data structures and algorithms.

Editing

Special Issue

- Evolutionary Computing & Complex Systems, Soft Computing Journal (A Fusion of Foundations, Methodologies and Applications / Computational Intelligence and Complexity), Tantar A., Tantar E. Bouvry P., Schütze O., Coello Coello C., Del Moral Pierre (Guest Editors), Di Nola A. (Editor-in-Chief), Loia V. (Co-Editor-in-Chief), 2012.

Books

- EVOLVE - A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computation V, *Advances in Intelligent Systems and Computing*, Springer, Alexandru-Adrian Tantar, Emilia Tantar, Jian-Qiao Sun, Wei Zhang, Qian Ding, Oliver Schütze, Michael Emmerich, Pierrick Legrand, Pierre Del Moral, Carlos A. Coello Coello (Editors), ISBN: 978-3-319-07493-1 (Print) 978-3-319-07494-8 (Online), 2014. http://link.springer.com/book/10.1007/978-3-319-07494-8

- EVOLVE - A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computation IV, *Advances in Intelligent Systems and Computing*, Springer, Michael Emmerich, Andre Deutz, Oliver Schütze, Thomas Bäck, Emilia Tantar, Alexandru-Adrian Tantar, Pierre Del Moral, Pierrick Legrand, Pascal Bouvry, Carlos A. Coello (Editors), ISBN: 978-3-319-01127-1, 2013. http://link.springer.com/book/10.1007/978-3-319-01128-8/page/1

- EVOLVE - A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computation III, *Studies in Computational Intelligence*, Springer, Oliver Schütze, Carlos A. Coello Coello, Alexandru-Adrian Tantar, Emilia Tantar, Pascal Bouvry, Pierre Del Moral, Pierrick Legrand (Editors), ISBN: 978-3-319-01459-3, 2013. http://link.springer.com/book/10.1007/978-3-319-01460-9/page/1

- EVOLVE II – A bridge between Probability, Set Oriented Numerics and Evolutionary Computation, *Advances in Intelligent and Soft Computing*, Springer, EVOLVE 2012 International Conference Proceedings, Schütze O., Coello Coello C., Tantar A., Tantar E., Bouvry P., Del Moral P., Legrand P. (Editors), ISBN: 978-3-642-31518-3, 2013. http://link.springer.com/book/10.1007/978-3-642-31519-0/page/1

- EVOLVE – A bridge between Probability, Set Oriented Numerics and Evolutionary Computation, *Studies in Computational Intelligence*, Springer, Tantar E., Tantar A., Bouvry P., Del Moral P., Legrand P., Coello Coello C., Schütze O. (Editors), ISBN: 978-3-642-32725-4, 2012. http://link.springer.com/book/10.1007/978-3-642-32726-1/page/1

Proceedings

- GECCO Companion '12: Proceedings of the 14th International Conference on Genetic and Evolutionary Computation Conference (GECCO) Companion, ACM, ISBN: 978-1-4503-1178-6, Philadelphia, Pennsylvania, USA, 2012.

- GECCO'11: Proceedings of the 13th Annual Conference Companion on Genetic and Evolutionary Computation (GECCO), SIGEVO, ISBN: 978-1-4503-0690-4, Dublin, Ireland, 2011.

Series

- EVOLVE 2014 Proceedings, A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computing, Alexandru-Adrian Tantar, Emilia Tantar, Jian-Qiao Sun, Wei Zhang, Qian Ding, Oliver Schütze, Michael Emmerich, Pierrick Legrand, Pierre Del Moral, Carlos A. Coello Coello (Editors), July 1-4, 2014, Beijing, China, ISBN: 978-2-87971-126-3, ISSN: 2222-9434, 2014.

- EVOLVE 2011 International Workshop Proceedings, A bridge between Probability, Set Oriented Numerics and Evolutionary Computation, Bouvry P., Tantar A., Tantar E. Del Moral P., Legrand P., Schütze O. (Editors), May 25-27, 2011, University of Luxembourg, ISBN: 978-2-87971-106-5, ISSN: 2222-9434, 2011.

Publications

Monograph Book

- **Alexandru-Adrian Tantar, Dragos Horvath**, Large Scale Computing for Conformational Sampling, Springer, 2015.

Book Chapters

- **Pierre Del Moral, Alexandru-Adrian Tantar, Emilia Tantar**, On the Foundations and the Applications of Evolutionary Computing, EVOLVE – A Bridge between Probability, Set Oriented Numerics and Evolutionary Computation, Studies in Computational Intelligence, Springer, vol. 447, pp. 3-89, Springer Berlin Heidelberg, ISBN: 978-3-642-32725-4, 2013.
- **A.-A. Tantar, G. Danoy, P. Bouvry, S. Khan**, Energy-Efficient Distributed Computing using Agent-Based Multi-Objective Dynamic Optimization, Green IT: Technologies and Applications, Springer-Verlag, 2011. [accepted proposal]
- **A.-A. Tantar, N. Melab, E.-G. Talbi**, A Grid-based Hybrid Hierarchical Genetic Algorithm for Protein Structure Prediction, in Erick Cantu Paz and Francisco Fernández de Vega, Parallel and Distributed Computational Intelligence, Springer Verlag, 2010.
- **A.-A. Tantar, N. Melab, E.-G. Talbi**, An Analysis of Dynamic Mutation Operators for Conformational Sampling, Biologically-Inspired Optimisation Methods: Parallel Algorithms, Systems and Applications, vol. 210, pp. 291–323, Springer Berlin/Heidelberg, ISBN: 978-3-642-01261-7, 2009.
- **E. Tantar, A.-A. Tantar, N. Melab, E.-G. Talbi**, Landscape Analysis in Adaptive Metaheuristics for Grid Computing, in Fatos Xhafa, Advances in Parallel Computing, Parallel Programming and Applications on Grids, P2P and Networked-based Systems, vol. 17, pp. 313–344, IOS Press, ISBN: 978-1-60750-004-9, 2009.
- **A.-A. Tantar, N. Melab and E.-G. Talbi**, Conformational sampling and docking on Grids, Grids for Bioinformatics and Computational Biology, Molecular Docking using Grid Computing, pp. 179-198, Wiley Series in Bioinformatics, USA, John Wiley & Sons, ISBN: 978-0-471-78409-8, 2007.

Journal Papers

- **Panuwat Trairatphisan, Andrzej Mizera, Jun Pang, Alexandru-Adrian Tantar, Thomas Sauter**, optPBN: An Optimisation Toolbox for Probabilistic Boolean Networks. PLoS ONE 9(7): e98001. doi:10.1371/journal.pone.0098001, 2014.
- **Panuwat Trairatphisan, Andrzej Mizera, Jun Pang, Alexandru-Adrian Tantar, Jochen Schneider, Thomas Sauter**, Recent development and biomedical applications of probabilistic Boolean networks, Cell Communication and Signaling, vol. 11, no. 1, pp. 1–25, BioMed Central, 2013. http://dx.doi.org/10.1186/1478-811X-11-46
- **Pierre Minvielle, Emilia Tantar, Alexandru-Adrian Tantar, Philippe Bérisset**, Sparse Antenna Array Optimization with the Cross-Entropy Method. IEEE Transactions on Antennas and Propagation Journal, vol. 59, no. 8, pp. 2862–2871, ISSN: 0018-926X, 2011.
- **Alexandru-Adrian Tantar, Nouredine Melab, El-Ghazali Talbi**, A Grid-based Genetic Algorithm combined with an Adaptive Simulated Annealing for Protein Structure Prediction. Soft Computing Journal – A Fusion of Foundations, Methodologies and Applications, Special issue on Distributed Bioinspired Algorithms, vol. 12(12), pp. 1185–1198, Springer Berlin/Heidelberg, 2008.
- **Alexandru-Adrian Tantar, Benjamin Parent, Nouredine Melab, Sylvaine Roy, El-Ghazali Talbi and Dragos Horvath**, Docking and Biomolecular Simulations on Computer Grids: Status and Trends. Current Computer-Aided Drug Design, vol. 4(3), pp. 235–249(15), Bentham Science Publishers, ISSN: 1573-4099, 2008.
- **A-A. Tantar, N. Melab, E-G. Talbi, H. Dragos and B. Parent**, A Parallel Hybrid Genetic Algorithm for Protein Structure Prediction on the Computational Grid. Elsevier Science, Future Generation Computer Systems, vol. 23(3), pp. 398-409, Elsevier Science Publishers B.V., Amsterdam, The Netherlands, 2007.

Conferences

- **Alexandru-Adrian Tantar, Emilia Tantar, and Oliver Schütze**, Asymmetric quadratic landscape approximation model. In Proceedings of the 2014 conference on Genetic and evolutionary computation (GECCO '14), July 12-16, 2014, Vancouver, BC, Canada. ACM, New York, NY, USA, 493-500. DOI=10.1145/2576768.2598381 http://doi.acm.org/10.1145/2576768.2598381, 2014.
- **Alexandru-Adrian Tantar, Anh Quan Nguyen, Pascal Bouvry, Bernabe Dorronsoro and El-Ghazali Talbi**, Computational Intelligence for Cloud Management Current Trends and Opportunities, Evolutionary Computation (CEC), 2013 IEEE Congress on, pp.1286,1293, 20-23 June 2013. http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6557713&isnumber=6557545
- **Z. Guede, A. Tantar, E. Tantar, P. Del Moral**, Application of a particle filter-based subset simulation to the reliability assessment of a marine structure, 31th International Conference on Ocean, Offshore and Artic Engineering, OMAE2012, July 1-6, 2012, Rio de Janeiro, Brazil, 2012.
- **Alexandru-Adrian Tantar, Emilia Tantar, Pascal Bouvry**, A classification of dynamic multi-objective optimization, in Proceedings of Genetic and Evolutionary Computation Conference (GECCO Companion), Dublin, Ireland, July 12-16, pp. 105-106, 2011.
- **Dragos Horvath, Lorraine Brillet, Sylvaine Roy, Sébastien Conilleau, Alexandru-Adrian Tantar, Jean-Charles Boisson, Nouredine Melab and El-Ghazali Talbi**, Local vs. Global Search Strategies in Evolutionary GRID-based Conformational Sampling & Docking. Evolutionary Computation in Bioinformatics and Computational Biology, IEEE Congress, Evolutionary Computation, CEC'09, pp. 247–254, ISBN: 978-1-4244-2958-5, 2009.
- **Jorge Tavares, Alexandru-Adrian Tantar, Nouredine Melab, El-Ghazali Talbi**, The Influence of Mutation on Protein-Ligand Docking Optimization: a Locality Analysis. Lecture Notes in Computer Science, Parallel Problem Solving From Nature – PPSN X, 2008, September 13-17, Technische Universität Dortmund, Germany, vol. 5199, pp. 589–598, Springer Berlin/Heidelberg, ISBN: 978-3-540-87699-1, 2008.
- **Jorge Tavares, Alexandru-Adrian Tantar, Nouredine Melab, El-Ghazali Talbi**, The Impact of Local Search on Protein-Ligand Docking Optimization. Hybrid Intelligent Systems, International Conference on, 10-12 Sept. 2008, pp. 53-58, 2008.
- **Benjamin Parent, Alexandru Tantar, Nouredine Melab, El-Ghazali Talbi, Dragos Horvath**, Grid-based evolutionary strategies applied to the conformational sampling problem. Evolutionary Computation, 2007. CEC 2007, IEEE Congress on, 25-28 Sept. 2007, pp. 291–296, September 25-28, ISBN: 978-1-4244-1339-3, 2007.
- **A-A. Tantar, N. Melab and E-G. Talbi**, A Comparative Study of Parallel Metaheuristics for Protein Structure Prediction on the Computational Grid. Proc. of the 10th IEEE/ACM Intl. Workshop on Nature Inspired Distributed Computing (NIDISC'07), Parallel and Distributed Processing Symposium, IPDPS 2007, Long Beach, California, March 26–30, pp. 1–10, ISBN: 1-4244-0910-1, 2007.
- **Emilia Tantar, A. Tantar**, Image processing for planetary robots. In Proceedings of European Mars and Planetary Conference (EMC), Iasi, Romania, July 26-28, 2004. Printed in Proceedings, Mars and Planetary Science and Technology, published by European Mars Society and Performantica Press, edited by H.N. Teodorescu, 2004, pp. 75-89, ISBN 973-7994-83-3.
- **E. Tantar, A. Tantar**, A hybrid approach for solving the job shop problem using a cumulative function. 8th International Symposium on Automatic Control and Computer Science (SACCS 2004), October 22 – 23, 2004, Iasi, Romania, CD proceedings.

Workshops

- **Alexandru-Adrian Tantar, Emilia Tantar**, A survey on sustainability in ICT: a computing perspective, in Proceedings of the Genetic and Evolutionary Computation Conference, GECCO '14 Companion, pp. 1213-1220, Vancouver, BC, Canada, July 12-16, 2014, ISBN: 978-1-4503-2881-4.

- **Alexandru-Adrian Tantar, Emilia Tantar, Pascal Bouvry**, Load balancing for sustainable ICT, in Proceedings of Genetic and Evolutionary Computation Conference, GreenIT Evolutionary Computation Workshop, 13th Annual Genetic and Evolutionary Computation Conference (GECCO 2011), ACM, 2011, pp. 733-738, Dublin, Ireland, July 12-16, 2011, ISBN: 978-1-4503-0690-4.

- **Pierre Del Moral, Emilia Tantar, Alexandru-Adrian Tantar, Zakoua Guede**, Particle methods – simulation and calibration for extreme sea conditions, Rare Events Simulation Workshop (RES 2010), Bordeaux, France, October 28-29, 2010.

- **Alexandru-Adrian Tantar, Nouredine Melab, El-Ghazali Talbi and Bernard Toursel**, Solving the Protein Folding Problem with a Bicriterion Genetic Algorithm on the Grid. Cluster Computing and the Grid, IEEE International Symposium on, Fourth International Workshop on Biomedical Computations on the Grid (BioGrid'06), Singapore, May 16-19, vol. 2, pp. 43, 2006.

- **E. Tantar, A. Tantar, C.Dhaenens, E.-G. Talbi**, XMOS – An eXact Multi-Objective Solver. Workshop International: Logistique & Transport 2006 (LT'2006), April 30 – May 2, 2006, Hammamet, Tunisia.

- **E.Tantar, A. Tantar, C. Dhaenens, E.-G. Talbi**, XMOS: plateforme générique pour l'optimisation multi-objectif. 7ème congrès de la Société Fran caise de Recherche Opérationnelle et d'Aide à la Décision (ROADEF), February 6-8, 2006, Lille, France.

- **Alexandru-Adrian Tantar**, Advanced Data Structures. StudIT (Students Communications Sessions), Timisoara, March 26-28, 2004, West University Timisoara.

Thesis

- **Alexandru-Adrian Tantar**, Parallel Hybrid Metaheuristics for Molecular Docking on Computational Grids. University of Lille 1, Laboratoire d'Informatique Fondamentale de Lille (LIFL) / INRIA Lille – Nord Europe, France, June 4, 2009.

Research Reports

- **Alexandru-Adrian Tantar, Emilia Tantar, Pascal Bouvry**, Design and classification of dynamic multi-objective optimization problems, CoRR abs/1103.4820, 2011.

- **F. Caron, P. Del Moral, A. Tantar, E. Tantar**, Simulation particulaire, Dimensionnement en conditions extrêmes. Report for the IFREMER research collaboration contract No. 2010-IFREMER-01 (92 pages), INRIA Bordeaux – Sud-Ouest, Bordeaux, 2010.

Extended Abstract

- **Alexandru-Adrian Tantar**, Objective Space Distortion Dominance, in Proceedings of the EVOLVE 2014 International Conference, A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computing. July 1-4, 2014, Beijing, China, ISBN: 978-2-87971-126-3, ISSN: 2222-9434, 2014.

Technical Reports

- **Alexandru-Adrian Tantar**, Building a Virtual Globus Grid in a Reconfigurable Environment – A case study: Grid5000. INRIA Technical Report 00168130m, INRIA – CNRS: UMR8022 – Université des Sciences et Technologies de Lille – Lille I, 2007.

Language Skills

- **English** – excellent working knowledge – reading, writing, speaking and understanding;
- **French** – excellent working knowledge – reading, writing, speaking and understanding;
- **Romanian** – native language.

Computer Skills

- **Programming Languages** – in depth knowledge of object oriented programming techniques and paradigms, extensive experience in using different integrated development environments (Visual Studio, KDevelop, Anjuta, Eclipse, etc.), development under different operating systems (Windows, Unix/Linux based systems).

  - **C/C++**: over 10 years of practical and applied experience, very good knowledge of the standard template library, standard headers, template programming;
  - **Java, Visual Basic, Pascal/Delphi, ASM/Assembler** – basic notions and concepts, occasional development of components for larger projects;
  - Web Technologies: **XML, XHTML, HTML, PHP, JavaScript/ECMA Script, CSS, MySQL/SQL** – on a requirement basis development;
  - Latex, Unix/Linux bash scripting, good knowledge of Unix/Linux environment and commands.

- **Frameworks and Technologies** – notions of COM/DCOM/COM+/ATL programming and development, MPI based programming, Globus Toolkit.

- **Operating Systems** – Mac OS, Windows, Unix/Linux based systems (RedHat, Fedora, Debian, Ubuntu, etc.), system administration.

- **Graphic Design** – extensive experience in working with Adobe Photoshop – image processing and enhancement, 3DS Max, experience in working with different shading and rendering engines, basic knowledge of AutoCAD, GIMP.

Hobbies

- chess – winner of the first edition of the "King of the Moment" chess contest, LIFL laboratory; backgammon, board games.
- digital photography, graphic design, image processing and enhancement, origami, aeronautics, flight simulators.

Referees

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