



**1st International Conference on the
Theory and Practice of
Natural Computing**
TPNC 2012, October 2 - 4, 2012
Tarragona, Spain



Program

Tuesday, October 2	
8:30 – 9:00	Registration
9:00 – 9:15	Opening
9:15 – 10:15	PONNUTHURAI N. SUGANTHAN: <i>Differential Evolution: Recent Advances</i> – Invited Talk
10:15 – 10:45	Coffee Break
10:45 – 11:45	MICHELANGELO CIANCIULLI, ROCCO ZACCAGNINO, ROSALBA ZIZZA: <i>An Easy Automata Based Algorithm for Testing Coding Properties of Infinite Sets of (DNA) Words</i>
	DANIELA GENOVA, KALPANA MAHALINGAM: <i>Generating DNA Code Words Using Forbidding and Enforcing Systems</i>
11:45 – 12:00	Break
12:00 – 13:00	MAX H. GARZON: <i>Theory and Applications of DNA Codeword Design</i> – Invited Talk
13:00 – 14:45	Lunch
14:45 – 15:35	POSTERSESSION: <i>Five Posters</i> – see next page
15:35 – 15:50	Break
15:50 – 16:40	POSTERSESSION: <i>Five Posters</i> – see next page
16:40 – 16:55	Break
16:55 – 18:00	Poster Discussions



Avinguda de Catalunya



Venue of the Conference

Tuesday, October 2 – Postersessions	
14:45 – 15:35	SHIN WATANABE, ATSUKO TAKAMATSU, YASUHIRO HAYASHI: <i>Design of Electric Power Distribution Networks Using a Biologically Inspired Algorithm</i>
	VLADIMIR SHPILRAIN, DIMA GRIGORIEV: <i>Nature-Based Cryptography</i>
	ALEXANDER SPIROV, DAVID HOLLOWAY: <i>Using Evolutionary Computations to Understand the Evolutionary Design of Gene Regulatory Networks</i>
	ILJA KUCEVALOVS, OJARS KRASTS, RUSINS FREIVALDS, THOMAS ZEUGMANN: <i>Influence of Technology on Learning Processes</i>
	KASPARS BALODIS, KARLIS JERINŠ, RUSINS FREIVALDS, AGNIS SKUSKOVNIKS, ILJA KUCEVALOVS: <i>Weak Computation by Frequency Finite-State Transducers</i>
15:35 – 15:50	Break
15:50 – 16:40	CHU QIN, XIAO HUA MA, ZHE SHI, YU ZONG CHEN: <i>Evaluation of the Hit and Target Selectivity Performance of Machine Learning Multi-Target Virtual Screening Models</i>
	LIN TAO, FENG ZHU, YUZONG CHEN: <i>Genome-Wide Protein-Protein Interactions Prediction from Amino Acid Sequence Using Support Vector Machines</i>
	MAURICIO GUEVARA-SOUZA, EDGAR VALLEJO: <i>Accelerating Simulations of Population Replacement Using Multicore Technologies</i>
	ADAM KOŽANÝ: <i>Influence of Forbidding a Rule Type on the Development of PM Colony</i>
	ALINA VASILIEVA, ELENA SHISHOVA: <i>Quantum Query Algorithms for Computing Multivalued Functions</i>



Circ Romà

Wednesday, October 3	
9:00 – 11:00	CHRISTIAN BLUM: <i>Hybrid Metaheuristics</i> – Invited Tutorial
11:00 – 11:30	Coffee Break
11:30 – 13:00	PETR SOSIK, LUDEK CIENCIALA: <i>Tissue P Systems with Cell Separation: Upper Bound by PSPACE</i>
	TIBOR KMET, MARIA KMETOVA: <i>Neural Networks Solving Free Final Time Optimal</i>
	DARKO STEFANOVIC: <i>Maze Exploration with Molecular-Scale Walkers</i>
13:00 – 14:45	Lunch
14:45 – 16:45	SERGIO SANTANDER-JIMÉNEZ, MIGUEL A. VEGA-RODRÍGUEZ, JUAN A. GÓMEZ-PULIDO, JUAN M. SÁNCHEZ-PÉREZ: <i>Comparing Different Operators and Models to Improve a Multiobjective Artificial Bee Colony Algorithm for Inferring Phylogenies</i>
	VÍCTOR BERROCAL-PLAZA, MIGUEL A. VEGA-RODRÍGUEZ, JUAN M. SÁNCHEZ-PÉREZ, JUAN A. GÓMEZ-PULIDO: <i>A Multi-Objective Approach to Solve the Location Areas Problem</i>
	MICHEL BOYER, RAN GELLES, TAL MOR: <i>Attacks on QKD with Fixed Apparatus</i>
	RAN GELLES, TAL MOR: <i>On the Security of Interferometric Quantum Key Distribution</i>
16:45 – 17:00	Break
17:00 – 18:00	BARBARA M. TERHAL: <i>Fragility of Quantum Information and Quantum Error Correction</i> – Invited Talk



Cathedral of Tarragona



Human Tower

Thursday, October 4	
9:00 – 10:00	PETER TIÑO: <i>Computational Intelligence in Astronomy – Win-Win Situation – Invited Talk</i>
10:00 – 10:30	Coffee Break
10:30 – 12:00	MAURICIO GUEVARA AND EDGAR VALLEJO: <i>Wolbachia Infection Improves Genetic Algorithms as Optimization Procedure</i>
	SALIMUR CHOUDHURY, KAI SALOMAA, SELIM G. AKL: <i>Cellular Automaton Based Motion Planning Algorithms for Mobile Sensor Networks</i>
	MARÍA BOTÓN-FERNÁNDEZ, FRANCISCO PRIETO, MIGUEL A. VEGA-RODRÍGUEZ: <i>Nature-inspired Algorithms Applied to an Efficient and Self-adaptive Resources Selection Model for Grid Applications</i>
12:00 – 12:15	Break
12:15 – 13:15	FAUSTINO GÓMEZ: <i>Scalable Neuroevolution for Reinforcement Learning – Invited Talk</i>
13:15	Closing

We acknowledge the support by:

