

IEEE TRANSACTIONS ON NANOBIOSCIENCE

A PUBLICATION OF
THE IEEE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY
THE IEEE COMPUTER SOCIETY
THE IEEE ROBOTICS AND AUTOMATION SOCIETY
THE IEEE COMPUTATIONAL INTELLIGENCE SOCIETY
THE IEEE NANOTECHNOLOGY COUNCIL

TECHNICALLY COSPONSORED BY
THE IEEE SYSTEMS, MAN AND CYBERNETICS SOCIETY

Indexed in the National Library of Medicine, PubMed®, and MEDLINE®



JANUARY 2015

VOLUME 14

NUMBER 1

ITMCEL

(ISSN 1536-1241)

Editorial: 1000 Issues and 1,000 Pages of Interdisciplinary Research Advances in 2015!	2
Estimation of Teaching-Learning-Based Optimization Primer Design Using Regression Analysis for Different Melting Temperature Calculations	3
PCR-CTPP Design for Enzyme-Free SNP Genotyping Using Memetic Algorithm	13
RGFinder: A System for Determining Semantically Related Genes Using GO Graph Minimum Spanning Tree	24
Spiking Neural P Systems With Rules on Synapses Working in Maximum Spikes Consumption Strategy	38
Constructing Query-Driven Dynamic Machine Learning Model With Application to Protein-Ligand Binding Sites Prediction	45
..... D.-J. Yu, J. Hu, Q.-M. Li, Z.-M. Tang, J.-Y. Yang, and H.-B. Shen	
RANWAR: Rank-Based Weighted Association Rule Mining From Gene Expression and Methylation Data	59
..... S. Mallik, A. Mukhopadhyay, and U. Maulik	
A Comprehensive Analysis of Strength-Based Optimum Signal Detection in Concentration-Encoded Molecular Communication With Spike Transmission	67
..... M. U. Mahfuz, D. Makrakis, and H. T. Mouftah	
Quantitative Analysis of Drug-Induced Complement-Mediated Cytotoxic Effect on Single Tumor Cells Using Atomic Force Microscopy and Fluorescence Microscopy	84
..... M. Li, L. Liu, N. Xi, Y. Wang, X. Xiao, and W. Zhang	
Structural Prediction of Dynamic Bayesian Network With Partial Prior Information	95
..... A. Maiti, R. Reddy, and A. Mukherjee	
DNA Algorithms of Implementing Biomolecular Databases on a Biological Computer	104
..... W.-L. Chang and A. V. Vasilakos	
Collision Bottleneck Throughput in Bacterial Conjugation-based Nanonetworks	112
..... N. Islam and S. Misra	
Quantum Algorithms and Mathematical Formulations of Biomolecular Solutions of the Vertex Cover Problem in the Finite-Dimensional Hilbert Space	121
..... W.-L. Chang, T.-T. Ren, and M. Feng	
Synthesis of ZnO Nanosphere for Picomolar Level Detection of Bovine Serum Albumin	129
..... M. Sasmal, T. K. Maiti, and T. K. Bhattacharyya	
Grow-Cut Based Automatic cDNA Microarray Image Segmentation	138
..... S. Katsigiannis, E. Zacharia, and D. Maroulis	
Error Performance of Diffusion-Based Molecular Communication Using Pulse-Based Modulation	146
..... A. Aijaz and A.-H. Aghvami	

IEEE TRANSACTIONS ON NANOBIOSCIENCE (ISSN 1536-1241) is published quarterly in print and bimonthly online by the Institute of Electrical and Electronics Engineers, Inc. Responsibility for the contents rests upon the authors and not upon the IEEE, the Society/Council, or its members. **IEEE Corporate Office:** 3 Park Avenue, 17th Floor, New York, NY 10016-5997. **IEEE Operations Center:** 445 Hoes Lane, Piscataway, NJ 08854-4141. **NJ Telephone:** +1 732 981 0060. **Price/Publication Information:** Individual copies: IEEE Members \$20.00 (first copy only), nonmembers \$339.00 per copy. (Note: Postage and handling charge not included.) Member and nonmember subscription prices available upon request. **Copyright and Reprint Permissions:** Abstracting is permitted with credit to the source. Libraries are permitted to photocopy for private use of patrons, provided the per-copy fee of \$31.00 is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. For all other copying, reprint, or republication permission, write to Copyrights and Permissions Department, IEEE Publications Administration, 445 Hoes Lane, Piscataway, NJ 08854-4141. Copyright © 2015 by the Institute of Electrical and Electronics Engineers, Inc. All rights reserved. **Postmaster:** Send address changes to IEEE TRANSACTIONS ON NANOBIOSCIENCE, IEEE, 445 Hoes Lane, Piscataway, NJ 08854-4141. GST Registration No. 125634188. CPC Sales Agreement #40013087. Return undeliverable Canada addresses to: Pitney Bowes IMEX, P.O. Box 4332, Stanton Rd., Toronto, ON M5W 3J4, Canada. IEEE prohibits discrimination, harassment and bullying. For more information visit <http://www.ieee.org/nondiscrimination>. Printed in U.S.A.

