Table of Contents

Applications of Artificial Immune Systems (Technical Stream)

Use of an Artificial Immune System for Job Shop Scheduling 1
C.A. Coello Coello, D. Cortés Rivera, and N. Cruz Cortés

An Artificial Immune System for Multimodality Image Alignment 11
E. Bendiab, S. Meshoul, and M. Batouche

Bioinformatics Data Analysis Using an Artificial Immune Network 22
G. Barreto Bezerra and L.N. de Castro

An Investigation of the Negative Selection Algorithm for Fault Detection in Refrigeration Systems 34
D.W. Taylor and D.W. Corne

Future Applications of Artificial Immune Systems (Conceptual Stream)

A Role for Immunology in "Next Generation" Robot Controllers 46
E. Hart, P. Ross, A. Webb, and A. Lawson

Immunologic Control Framework for Automated Material Handling 57
H.Y.K. Lau and V.W.K. Wong

An Immune Learning Classifier Network for Autonomous Navigation 69
P.A. Vargas, L.N. de Castro, R. Michelan, and F.J. Von Zuben

Software Vaccination: An Artificial Immune System Approach to Mutation Testing 81
P. May, K. Mander, and J. Timmis

Special Session on Immunocomputing

Memory and Selectivity in Evolving Scale-Free Immune Networks 93
P. Tieri, S. Valensin, C. Franceschi, C. Morandi, and G.C. Castellani

Biomolecular Immunocomputing 102
L. Goncharova, Y. Melnikov, and A.O. Tarakanov

Signal Processing by an Immune Type Tree Transform 111
N.D. Atreas, C.G. Karanikas, and A.O. Tarakanov

Index Design by Immunocomputing 120
L. Sokolova

Emerging Metaphors (Conceptual Stream)

Immune-Based Framework for Exploratory Bio-information Retrieval from the Semantic Web 128
D. Lee, J. Kim, M. Jeong, Y. Won, S.H. Park, and K.-H. Lee

An Artificial Immune System Approach to Semantic Document Classification 136
J. Greensmith and S. Cayzer

Danger Theory: The Link between AIS and IDS? 147
U. Aickelin, P. Bentley, S. Cayzer, J. Kim, and J. McLeod

A Danger Theory Inspired Approach to Web Mining 156
A. Secker, A.A. Freitas, and J. Timmis

Augmentations of Artificial Immune System Algorithms (Technical Stream)

Meta-stable Memory in an Artificial Immune Network 168
M. Neal

Improved Pattern Recognition with Artificial Clonal Selection? 181
J.A. White and S.M. Garrett

Improving SOSDM: Inspirations from the Danger Theory 194
E. Hart and P. Ross

Theory of Artificial Immune Systems (Conceptual Stream)

Artificial Immune Systems and the Grand Challenge for Non-classical Computation 204
S. Stepney, J.A. Clark, C.G. Johnson, D. Partridge, and R.E. Smith

A Paratope Is Not an Epitope: Implications for Immune Network Models and Clonal Selection 217
S.M. Garrett

Revisiting the Foundations of Artificial Immune Systems: A Problem-Oriented Perspective 229
A.A. Freitas and J. Timmis

Complementary Dual Detectors for Effective Classification 242
H.T. Ceong, Y.-i. Kim, D. Lee, K.-H. Lee

Representations and Operators (Technical Stream)

The Crossover Closure and Partial Match Detection 249
F. Esponda, S. Forrest, and P. Helman

A Randomized Real-Valued Negative Selection Algorithm 261
F. González, D. Dasgupta, and L.F. Niño

Dynamic Function Optimisation: Comparing the Performance of Clonal Selection and Evolution Strategies 273
J.H. Walker and S.M. Garrett

The Effect of Antibody Morphology on Non-self Detection 285
J. Kaers, R. Wheeler, and H. Verrelst

Plenary Session

The Immune System as a Cognitive System: New Perspectives for Information Technology Society 296
C. Franceschi

Author Index 299