

{tag} International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

[Volume 131](#)

-
[Number 1](#)

Year of Publication: 2015

Authors:

Olubadeji Bukola, Adetunmbi A.O, Alese B.K.

10.5120/ijca2015907236

{bibtex}2015907236.bib{/bibtex}

Abstract

Existing immune-inspired techniques have not performed as well as expected when applied to the detection of intruders in computer systems. In nature, dendritic cells function as natural anomaly detection agents, instructing the immune system to respond if stress or damage is detected, it is also a crucial cell in the detection and combination of 'signals' which provide the immune system with a sense of context.

References

1. Aickelin and Cayzer 2002. The danger theory and its application to artificial immune systems. In Proc.of the 1st International Conference on Artificial Immune Systems (ICARIS). University of Kent at Canterbury Printing Unit.
2. Burgess, M. 1998. Computer immunology. In Proc. of the Systems Administration Conference (LISA-98).
3. de Castro and Von Zuben 2002. Learning and Optimization Using the Clonal Selection

Principle, IEEE Transactions on Evolutionary Computation, Special Issue on Artificial Immune Systems.

4. Forrest, .S., Perelson, .A., Allen, .L. and Cherukuri. 1994. Self-nonsel self discrimination in a computer. In Proc. of the IEEE Symposium on Security and Privacy, 1994, 202–209. IEEE Computer Society.

5. Greensmith .J. 2007. The Dendritic CellAlgorithm. Ph.D thesis, School of Computer Science, University of Nottingham.

6. Jiawei and Micheline, K. 2006. Data Mining:Concepts and techniques, second edition, Elsevier inc.Spector,

7. Leandro N. de Castro and Timmis, J. 2002. Artificial Immune Systems: A New Computational Intelligent Approach. Springer-Verlag.

8. Lutz, .M .B. and Schuler, G. 2002. Immature, semi-mature and fully mature dendritic cells: which signals induce tolerance or immunity? TRENDS in Immunology, 23(9): pages 445-449.

9. Matzinger. P. 2002. The Danger Model: A Renewed Sense of Self. Science, 296(5566): pages 301{305.

10. Hofmeyr, .S and Forrest, .S. 1999. Immunity by design. In Proc. of the Genetic and evolutionary computation Conference (GECCO), pages 1289–1296.

11. Hofmeyr, S. A, Somayaji, .A and Forrest, .S. 1999, Intrusion detection using sequences of system calls, J. Computer. Security. Vol.6, pp. 151–180.

12. Jerne. N. K. 1974. Towards a network theory of the immune system. Ann. Immunol. (Inst. Pasteur), 125C, 373-389.

13. Ji, Z. and Dasgupta, D. 2007. Revisiting negative selection algorithms, Evolutionary Computation, vol.15, no. 2, pages .223-251.

14. Matzinger, .P. 1998. An innate sense of danger. Semin. Immunol.10, pages399–415

15. Powers, .S and He, .J. 2008. A hybrid artificial immune system and Self Organising Map for network intrusion detection, Information Sciences, 2008, vol.178, no. 15, pp.3024-3042

16. Schenten, .D, and Medzhitov, R. 2011. “The control of adaptive immune responses by the innate immune system”, Adv Immunol. vol.109, pages 87-124.

17. Stibor, .T, Mohr, .P, Timmis, J and Eckert, .C. 2005. Is negative selection appropriate for anomaly detection? In Proc. of Genetic and Evolutionary Computation Conference (GECCO), pages 321–328.

18. Timmis, J. 2007. Artificial immune systems: today and tomorrow. Natural Computing, 2007, 6(1): pages1–18.

19. Twycross, J. (2007): “Integrated innate and adaptive artificial immune systems applied to process anomaly detection”, PhD thesis, School of Computer Science, The University of Nottingham.2007.

20. Yeom, K. W. 2007. Immune-inspired algorithm for anomaly detection, Stud. Comput. Intell. (SCI). 57, pages 129–154.

Index Terms

Computer Science

Applied Sciences

Keywords

Context, Artificial Immune System (AIS), Human Immune System