Category: Basic research

Title: Study of neural networks in combination with nature-inspired algorithms in cloud computing and network communication **Authors (IISAS)**: Giang Nguyen **Projects**: VEGA 2/0167/16

Annotation:

The ability to make accurate forecasts has far-reaching impact in many life aspects of our society. In recent years, neural networks and artificial intelligence have made extraordinary progress in many areas. They operate with robust algorithms and data structures that are capable of modeling very complicated and complex processes. Their optimization is necessary, especially when it comes to multilayer neural networks working with multidimensional data. In this direction, the neural network optimization study has been conducted using nature-inspired algorithms, i.e., genetic algorithm [3], adaptive bacterial foraging optimization [2] and novel opposition-based coral reefs optimization [1]. The intelligent solution has been designed and experimentally verified on real data that comes from monitoring cloud computing resources (Google datasets) and network traffic data (network traffic datasets). The results were published at the conference (indexed in WoS database) [3], Springer Lecture Notes in Computer Science - Theory and Applications of Models of Computation (Q2) [2] and in the International Journal of Computational Intelligence Systems (CC, Q1) [1].



Training of multilayer multidimensional neural network using adaptive bacterial foraging optimization.

Scientific publications:

- NGUYEN, Thieu NGUYEN, Tu NGUYEN, Binh Minh NGUYEN, Giang. Efficient time series forecasting using neural network and opposition-based coral reefs optimization. International Journal of Computational Intelligence Systems, Volume 12, Issue 2, pp. 1144-1161, ISSN 1875-6891, DOI 10.2991/ijcis.d.190930.003, Atlantis Press, 2019. SCIE. CC BY-NC 4.0. (2.153- IF2018). (Current Contents). (Q1). Typ: ADCA
- [2] NGUYEN, Thieu NGUYEN, Binh Minh NGUYEN, Giang. Building resource auto-scaler with functional-link neural network and adaptive bacterial foraging optimization. In Lecture Notes in Computer Science: Theory and Applications of Models of Computation, 2019, vol. 11436, p. 501-517. ISBN 978-3-030-14811-9. ISSN 0302-9743. (Q2). Typ: ADMB
- [3] NGUYEN, Thieu TRAN, Nhuan NGUYEN, Binh Minh NGUYEN, Giang. A resource usage prediction system using functional-link and genetic algorithm neural network for multivariate cloud metrics. In 11th IEEE International Conference on Service Oriented Computing and Applications, Paris, France, 2018, p. 49-56. ISBN 978-1-5386-9133-5. (indexovaná v databáze WoS). Typ: ADMB