Προτεινόμενες θεωρητικές εργασίες

1. Θεωρητική παρουσίαση των **Γενετικών αλγόριθμων** και μελέτη και παρουσίαση μιας από τις ακόλουθες δημοσιεύσεις:

    1. Bruce L Jacob, Composing with genetic algorithms. Proc. International Computer Music Conference (ICMC '95), pp. 452-455. Banff Alberta, September 1995.

    2. Ying-Hong Liao and Chuen-Tsai Sun, "An educational genetic algorithms learning tool," in *IEEE Transactions on Education*, vol. 44, no. 2, pp. 20 pp.-, May 2001, doi: 10.1109/13.925863.
    3. Potvin, JY. Genetic algorithms for the traveling salesman problem. *Ann Oper Res* **63,** 337–370 (1996). https://doi.org/10.1007/BF02125403

    4. Sam Mahfoud & Ganesh Mani, Financial forecasting using genetic algorithms, Applied Artificial Intelligence 10, pp. 543-566, 1996.

    5. Minaei-Bidgoli B., Punch W.F. (2003) Using Genetic Algorithms for Data Mining Optimization in an Educational Web-Based System. In: Cantú-Paz E. et al. (eds) Genetic and Evolutionary Computation — GECCO 2003. GECCO 2003. Lecture Notes in Computer Science, vol 2724. Springer, Berlin, Heidelberg. https://doi.org/10.1007/3-540-45110-2_119

2. Θεωρητική παρουσίαση της τεχνικής **Particle Swarm Optimization** και μελέτη και παρουσίαση μίας από τις ακόλουθες δημοσιεύσεις:

    1. J. Robinson and Y. Rahmat-Samii, "Particle swarm optimization in electromagnetics," in *IEEE Transactions on Antennas and Propagation*, vol. 52, no. 2, pp. 397-407, Feb. 2004, doi: 10.1109/TAP.2004.823969.
    2. Yu Liu, Zheng Qin, Zhewen Shi, Jiang Lu, Center particle swarm optimization, Neurocomputing, 70, pp. 672-679, 2007.

    3. Z. Zhan, J. Zhang, Y. Li and H. S. Chung, "Adaptive Particle Swarm Optimization," in *IEEE Transactions on Systems, Man, and Cybernetics, Part B (Cybernetics)*, vol. 39, no. 6, pp. 1362-1381, Dec. 2009, doi: 10.1109/TSMCB.2009.2015956.
    4. A. Stacey, M. Jancic and I. Grundy, "Particle swarm optimization with mutation," *The 2003 Congress on Evolutionary Computation, 2003. CEC '03.*, Canberra, ACT, Australia, 2003, pp. 1425-1430 Vol.2, doi: 10.1109/CEC.2003.1299838.
    5. Mojtaba Ahmadieh Khanesar, Mohammad Teshnehlab and Mahdi Aliyari Shoorehdeli, "A novel binary particle swarm optimization," *2007 Mediterranean Conference on Control & Automation*, Athens, Greece, 2007, pp. 1-6, doi: 10.1109/MED.2007.4433821.
3. Παρουσίαση της τεχνικής **Grammatical Evolution** και μελέτη και παρουσίαση μίας από τις ακόλουθες δημοσιεύσεις:

    1. Alfonso Ortega de la Puente ,Rafael Sánchez Alfonso Manuel Alfonseca Moreno, Automatic composition of music by means of grammatical evolution, APL '02: Proceedings of the 2002 conference on APL: array processing languages: lore, problems, and applicationsJune 2002 Pages 148–155https://doi.org/10.1145/602231.602249

    2. Ian Dempsey, Michael O'Neill, Anthony Brabazon, Constant creation in grammatical evolution, International Journal of Innovative Computing and Applications (IJICA), Vol. 1, No. 1, 2007

3. Galván-López E., Swafford J.M., O'Neill M., Brabazon A. (2010) Evolving a Ms. PacMan Controller Using Grammatical Evolution. In: Di Chio C. et al. (eds) Applications of Evolutionary Computation. EvoApplications 2010. Lecture Notes in Computer Science, vol 6024. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-12239-2_17
4. O'Neill M., Brabazon A., Ryan C., Collins J.J. (2001) Evolving Market Index Trading Rules Using Grammatical Evolution. In: Boers E.J.W. (eds) Applications of Evolutionary Computing. EvoWorkshops 2001. Lecture Notes in Computer Science, vol 2037. Springer, Berlin, Heidelberg. https://doi.org/10.1007/3-540-45365-2_36
5. Dimitris Gavrilis, Ioannis G. Tsoulos, Evangelos Dermatas, Selecting and constructing features using grammatical evolution, Pattern Recognition Letters 29, pp. 1358-1365, 2008.

4. Θεωρητική παρουσίαση των **τεχνητών νευρωνικών δικτύων** και παρουσίαση μίας εκ των παρακάτω εργασιών
   1. Xin Yao, "Evolving artificial neural networks," in *Proceedings of the IEEE*, vol. 87, no. 9, pp. 1423-1447, Sept. 1999, doi: 10.1109/5.784219.
   2. Soteris A. Kalogirou, Artificial neural networks in renewable energy systems applications: a review, Renewable and Sustainable Energy Reviews 5, pp. 373-401, 2001.
   3. J. Jiang, P. Trundle, J. Ren, Medical image analysis with artificial neural networks, Computerized Medical Imaging and Graphics 34, pp. 617-631, 2010.
   4. A. Sezin Tokar and Peggy A. Johnson, Rainfall-Runoff Modeling Using Artificial Neural Networks, Journal of Hydrologic Engineering 4, 1999.
   5. Jari J. Forsström & Kevin J. Dalton (1995) Artificial Neural Networks for Decision Support in Clinical Medicine, Annals of Medicine, 27:5, 509-517, DOI: 10.3109/07853899509002462
   6. Hussein A. Abbass, An evolutionary artificial neural networks approach for breast cancer diagnosis, Artificial Intelligence in Medicine **25**, pp. 265-281, 2002.
   7. I. E. Lagaris, A. Likas and D. I. Fotiadis, "Artificial neural networks for solving ordinary and partial differential equations," in *IEEE Transactions on Neural Networks*, vol. 9, no. 5, pp. 987-1000, Sept. 1998, doi: 10.1109/72.712178.