Chyh-Ming Lai

Associate Professor and Director

⊙ Taipei 112, Taiwan

Details

Institute of Resources Management and Decision Science, ⤶
Management College, National Defense University,
Taipei 112, Taiwan
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NATIONALITY
ROC (Taiwan)

🧠 Research Field

Evolutionary Algorithm

Reliability

Data Mining

💼 Work Experience

Battalion Commander (Army) at ROC (Taiwan), Taipei
November 2010 – September 2012

Assistant Professor at National Defense University, Taipei
August 2016 – Present

Associate Professor at National Defense University, Taipei
February 2020 – Present

Associate Professor and Director
April 2021 – Present

🌐 Social Profiles

Google Scholar

NDUSCSL

NDUSCSL

🎓 Education

Doctor Degree of IEEM, National Tsing Hua University
August 2012 – May 2016

📊 Publications

Journal Papers

15. Yeh, W. C., Lin, Y. P., Liang, Y. C., Lai, C. M., & Huang, C. L. (2023). **Simplified Swarm Optimization for Hyperparameters of Convolutional Neural Networks.** *Computers & Industrial Engineering*, 109076.
14. Lai, C. M. (2022). **The application of simplified swarm optimization in a precautionary evacuation model.** *Swarm and Evolutionary Computation*, 75, 101189.
13. Lai, C. M., Chiu, C. C., Shih, Y. C., & Huang, H. P. (2022). **A hybrid feature selection algorithm using simplified swarm optimization for body fat prediction.** *Computer Methods and Programs in Biomedicine*, 226, 107183.
12. Chiu, C. C., & Lai, C. M. (2022). **Multi-objective missile boat scheduling problem using an integrated approach of NSGA-II, MOEAD, and data envelopment analysis.** *Applied Soft Computing*, 127, 109353.
11. Lai, C. M., & Tseng, M. L. (2022). **Designing a reliable hierarchical military logistic network using an improved simplified swarm optimization.** *Computers & Industrial Engineering*, 169, 108153.
10. Chiu, C. C., Lai, C. M., & Chen, C. M. (2022). **An evolutionary simulation-optimization approach for the problem of order allocation with flexible splitting rule in semiconductor assembly**. *Applied Intelligence*, 1-23.
9. Lai, C. M., & Huang, H. P. (2021). **A gene selection algorithm using simplified swarm optimization with multi-filter ensemble technique.** *Applied Soft Computing*, 100, 106994.
9. Lai, C. M., Chiu, C.C., Liu, W. C., Yeh, W. C. (2019). **A novel nondominated sorting simplified swarm optimization for multi-stage capacitated facility location problems with multiple quantitative and qualitative**

objectives. *Applied Soft Computing*, 105684.

8. Lai, C. M., Wu, T. H. (2019). **Simplified Swarm Optimization with Initialization Scheme for Dynamic Weapon-Target Assignment Problem**. *Applied Soft Computing*, 105542.

7. Lai, C. M. (2019). **Integrating simplified swarm optimization with AHP for solving capacitated military logistic depot location problem**. *Applied Soft Computing*, 78, 1-12.

6. Lai, C. M. (2018). **Multi-objective simplified swarm optimization with weighting scheme for gene selection**. *Applied Soft Computing*, 65, 58-68.

5. Lai, C. M., Yeh, W. C., & Huang, Y. C. (2017). **Entropic simplified swarm optimization for the task assignment problem**. *Applied Soft Computing*, 58, 115-127.

4. Lai, C. M., Yeh, W. C., & Chang, C. Y. (2016). **Gene selection using information gain and improved simplified swarm optimization**. *Neurocomputing*, 218, 331-338.

3. Lai, C. M., & Yeh, W. C. (2016). **Two-stage simplified swarm optimization for the redundancy allocation problem in a multi-state bridge system**. *Reliability Engineering & System Safety*, 156, 148-158.

2. Yeh, W. C., Lai, C. M., & Chang, K. H. (2016). **A novel hybrid clustering approach based on K-harmonic means using robust design**. *Neurocomputing*, 173, 1720-1732.

1. Yeh, W. C., & Lai, C. M. (2015). **Accelerated simplified swarm optimization with exploitation search scheme for data clustering**. *PloS one*, 10(9), e0137246.

Conference Papers

16. Yeh, W. C., Lai, C. M., & Tsai, J. Y. (2019, November). **Simplified swarm optimization for optimal deployment of fog computing system of industry 4.0 smart factory.** In Journal of Physics: Conference Series (Vol. 1411, No. 1, p. 012005). IOP Publishing.

15. Yeh, W. C., Lai, C. M., & Tsai, M. H. (2019, November). **Nurse scheduling problem using Simplified Swarm Optimization.** In Journal of Physics: Conference Series (Vol. 1411, No. 1, p. 012010). IOP Publishing.

14. Yeh, W. C., Lai, C. M., & Tseng, K. C. (2019, November). **Fog computing task scheduling optimization based on multi-objective simplified swarm optimization.** In Journal of Physics: Conference Series (Vol. 1411, No. 1, p. 012007). IOP Publishing.

13. Yeh, W. C., Lai, C. M., & Peng, Y. F. (2019, November). **Multi-objective optimal operation of renewable energy hybrid CCHP system using SSO.** In Journal of Physics: Conference Series (Vol. 1411, No. 1, p. 012016). IOP Publishing.

12. Huang, C. L., Jiang, Y. Z., Tan, S. Y., Yeh, W. C., Chung, V. Y. Y., & Lai, C. M. (2018, July). **Simplified Swarm Optimization for the Time Dependent Competitive Vehicle Routing Problem with Heterogeneous Fleet**. In 2018 IEEE Congress on Evolutionary Computation (CEC) (pp. 1-8). IEEE.

11. Huang, C. L., Jiang, Y. Z., Tan, S. Y., Yeh, W. C., Chung, V. Y. Y., & Lai, C. M. (2018, July). **Simplified Swarm Optimization for the Time Dependent Competitive Vehicle Routing Problem with Heterogeneous Fleet**. In 2018 IEEE Congress on Evolutionary Computation (CEC) (pp. 1-8). IEEE.

10. Huang, C. L., Jiang, Y. Z., Yin, Y., Yeh, W. C., Chung, V. Y. Y., & Lai, C. M. (2018, July). **Multi Objective Scheduling in Cloud Computing Using MOSSO**. In 2018 IEEE Congress on Evolutionary Computation (CEC) (pp. 1-8). IEEE.

9. Yeh, W. C., Lee, Y. C., Lai, C. M., Shih, Y. C., Huang, H. P., & Jiang, Y. (2017, July). **A hybrid data gravitation based classification algorithm applied to gene expression data**. In 2017 13th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD) (pp. 1580-1585). IEEE.

8. Yeh, W. C., Lai, C. M., Ting, H. Y., Jiang, Y., & Huang, H. P. (2017, July). **Solving single row facility layout problem with simplified swarm optimization**. In 2017 13th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD) (pp. 267-270). IEEE.

7. Yeh, W. C., Lai, C. M., Huang, Y. C., Cheng, T. W., Huang, H. P., & Jiang, Y. (2017, July). **Simplified swarm optimization for task assignment problem in distributed computing system**. In 2017 13th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD) (pp. 773-776). IEEE.

6. Yeh, W. C., Yang, Y. T., & Lai, C. M. (2017). **A Hybrid Simplified Swarm Optimization Method for Imbalanced Data Feature Selection**. Australian Academy of Business and Economics Review, 2(3), 263-275.

5. Yeh, W. C., Wang, S. T., Lai, C. M., Huang, Y. C., Chung, Y. Y., & Lin, J. S. (2016, July). **Simplified swarm optimization for repairable redundancy allocation problem in multi-state systems with bridge topology**. In Neural Networks (IJCNN), 2016 International Joint Conference on (pp. 3935-3941). IEEE.

4. Huang, C. L., Yeh, W. C., Wu, H. S., Lai, C. M., & Huang, Y. X. (2016, June). **A novel 3D binary-state angle network and its reliability evaluate**. In Intelligent Control and Automation (WCICA), 2016 12th World Congress on (pp. 1876-1880). IEEE.

3. Yeh, W. C., Luo, C. Y., Lai, C. M., Hsu, C. T., Chung, Y. Y., & Lin, J. S. (2016, July). **Simplified swarm optimization with modular search for the general multi-level redundancy allocation problem in series-parallel systems.** In Evolutionary Computation (CEC), 2016 IEEE Congress on (pp. 778-784). IEEE.

2. Jiang, Y., Yeh, W. C., Lai, C. M., Liu, H. H., Yeh, C. H., Chung, Y. Y., & Lin, J. S. (2016, July). **Integrated use of soft computing and clustering for capacitated clustering single-facility location problem with one-time delivery.** In Evolutionary Computation (CEC), 2016 IEEE Congress on (pp. 2701-2705). IEEE.

1. Yeh, W. C., Lin, W. T., Lai, C. M., Lee, Y. C., Chung, Y. Y., & Lin, J. S. (2016, July). A**pplication of simplified swarm optimization algorithm in deteriorate supply chain network problem.** In Evolutionary Computation (CEC), 2016 IEEE Congress on (pp. 2695-2700). IEEE.

▦ Patents

1. Wei-Chang, Y. E. H., & Lai, C. M. (2017). U.S. Patent Application No. 14/886,585.

▤ Supervision of Research Students

Completions

1. Yi-Yen Chen (**The Crafts Rostering Problem of Naval Missile Fast-Attack Craft Squadron**)
2. Guan-Jhong Syu (**The Military Logistic Depot Location Problem**)
3. Tsung-Hua Wu (**Weapon-Target Assignment Problem with Failure Weapon**)
4. Chi-Hsuan Chiang (**Using Simplified Swarm Optimization to Optimize the Military Deployment for Short-Notice Emergency Evacuation**)
5. Po-Wei Chang (**A Hybrid Gene Selection Method: Simplified Swarm Optimization with Data Envelopment Analysis**)
6. Hsu-Ta Huang (**An Integrated Model of Target Assignment and Fire Scheduling Problem for Field Artillery**)
7. Ming-Hung Tsai (**Optimization of Multi-Mission Selective Maintenance for the Cheng Kung Class Patrol Frigate**)
8. Jo-Yu Chen (**Reliable Facility Location Problem for Military Logistic Network Design**)
9. Pao-Hui Huang (**Bilevel Programming Model and Solution method for the Career Field selection of Military Academy**)
10. Shiou-Jing Chen (**An Extended Shortest Path Network Interdiction Problem and Solution Method in Optimizing Force Deployment for Homeland Defense in Depth**)

✌ MOST Projects

Completions

6. The artillery fire allocation and scheduling problem with additional resource constraints and time windows **(MOST 110-2221-E-606-015-)**

5. The Optimization Model of the Force Deployment for Short-Notice Emergency Evacuation **(MOST 109-2221-E-606-013-)**

4. Multi-Objective Dynamic Weapon-Target Assignment Problem with the Minimum Fire Transfers **(MOST 108-2221-E-606-004-)**

3. A multi-objective optimization method with trade-off ranking based on soft computing for the naval fast attack craft scheduling problem **(MOST 107-2221-E-606-009-)(107 Best Poster Award)**

2. A classification method with embedded gene selection based on soft computing for gene expression data **(MOST 106-2221-E-606-010-)**

1. Task assignment in heterogeneous computing systems using soft computing **(MOST 106-2218-E-606-001-)**

In progress

1. Advances for the artillery fire planning problem: Modeling, global optimization, and computational studies **(MOST 111-2221-E-606-007-)**