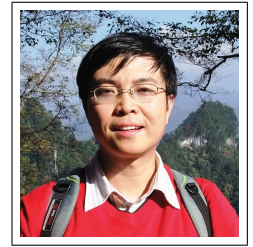# Xingguang Peng

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Research Interests

➤ **Evolutionary Computation:** Cooperative co-evolutionary algorithm, Competitive co-evolutionary algorithm, Modal based evolutionary algorithm

➤ **Optimization of Complex Problems:** Dynamic optimization, Large-scale optimization, Multi-objective optimization

➤ **Robotics:** Swarm robotics, Distributed decision making

➤ **Applications:** Underwater unmanned vehicle, Unmanned surface vehicle

Education and Work Experience

2018-present	**Professor**, *School of Marine Science and Technology,Northwestern Polytechnical University*, Xi'an, China.
02/2018	**Visiting Professor**, *School of Computer Science and Engineering*, Nanyang Technological University, Singapore. **Collaborator:** *Prof. Yew-Soon Ong*
02/2015-02/2016	**Visiting Scholar**, *Department of Computing*, University of Surrey, UK. **Collaborator:** *Prof. Yaochu Jin*
2012-2018	**Associate Professor**, *School of Marine Science and Technology, Northwestern Polytechnical University*, Xi'an, China.
2010-2012	**Postdoctoral Researcher**, *Institute of Underwater Vehicle, Northwestern Polytechnical University*, Xi'an, China. **Supervisor:** *Prof. Demin Xu*, an academician of Chinese Academy of Engineering.
2005-2009	**Ph.D. System Engineering (ahead of schedule)**, *Northwestern Polytechnical University, School of Electronics and Information*, Xi,an, China. **Supervisor:** *Prof. Xiaoguang Gao*. **Doctoral thesis:** Evolutionary Algorithms in Dynamic Environments and their Applications to Unmanned Aerial Vehicles (UAVs).
2003-2006	**M.Eng. System Engineering**, *Northwestern Polytechnical University, School of Electronics and Information*, Xi,an, China.
1999-2003	**B.Eng. Electronics and Information**, *Northwestern Polytechnical University, School of Electronics and Information*, Xi,an, China.

Grants

2015-2018	**Dependency Learning and Grouping of Variables for Cooperative Coevolutioanry Algorithms.**
☞	Founded by National Nature and Science Foundation of China (NSFC), Grant number: 61473233, ¥820,000.
2012-2014	**Interaction Scheme of Coevolutionary Populations for Distributed Cooperative Coevolutionary Algorithms.**
☞	Founded by National Nature and Science Foundation of China (NSFC), Grant number: 61105068, ¥220,000.

2011	**Distributed Cooperative Coevolutionary Algorithms for Communication-Cost-Sensitive Systems.**
	☞ Founded by Chinese Postdoctoral Science Foundation, Grant number: 2011M501475, ¥30,000.
2013-2014	**Information Compensation and Adaptive Interaction Strategies for Anti-Pathology Distributed Cooperative Coevolutionary Algorithms.**
	☞ Founded by NPU Foundation for Fundamental Research, Grant number: JCY20130110, ¥150,000.

Professional Activities

Member
Senior Member of Chinese Association of Automation (CAA). Member of IEEE, ACM-SIGEVO, IEEE CIS, IEEE RAS, China Association of Artificial Intelligence. Member of Task Force on Data-Driven Evolutionary Optimization of Expensive Problems Technical Committee of IEEE Computational Intelligence Society, Intelligent Command and Control System Engineering Technical Committee of Chinese Institute of Command and Control, Construction Robotics and Automation Technical Committee of CAA.

Reviewer
TEVC, TCYB, TSMC-S, TIE, SCIENCE CHINA F, Soft Comput., Natural Comput., Engineering Optimization, The Aeronautical Journal, Complex & Intelligent Systemsetc.

Conference
GECH Member of GECCO 2018, 2019,2020. Organizer and chair of IEEE CEC 2019 Special Session on Evolutionary Computation for Multi-Agent Systems. Organizer of International Conference of Unmanned Systems 2020 Special session of Underwater Unmanned Systems. Co-chair of the distributed multiagent systems session of 30th Chinese Control Conference.

List of Publications

Book

[1] Xingguang Peng*, Dynamic Evolutionary Algorithm and Its Application for Unmanned Systems. Science China Press Ltd. ISBN 9787030523648, 2017. (In Chinese)

Book Chapter

[2] Xingguang Peng*, Shengxiang Yang, Demin Xu, Xiaoguang Gao, Solving Dynamic Optimization Problems for Multiple UCAV Anti-Ground Attack Using Dynamic Evolutionary Algorithms. In S. Yang, and X. Yao (eds.), *Evolutionary Computation for Dynamic Optimization Problems*, in the book series on Studies in Computational Intelligence, Springer-Verlag. 2013.

Selected Journal Paper

[3] Xingguang Peng, Yaochu Jin*, Handing Wang. Multi-Modal Optimization Enhanced Cooperative Coevolution for Large-Scale Optimization. *IEEE Transactions on Cybernetics*. minor reversion.

[4] Xingguang Peng*, Yapei Wu. Large-Scale Cooperative Co-Evolution Using Niching Based Multi-Modal Optimization and Adaptive Fast Clustering. *Swarm and Evolutionary Computation*. vol 35, pp. 65-77, 2017.

[5] Xingguang Peng*, Kun Liu, Yaochu Jin, A Dynamic Optimization Approach to The Design of Cooperative Co-Evolutionary Algorithms, *Knowledge-Based Systems*, vol. 109, pp. 174-186, 2016.

[6] Xingguang Peng*, Xiaoguang Gao, Shengxiang Yang. Environment Identification Based Memory Scheme for Estimation of Distribution Algorithms in Dynamic Environments. *Soft Computing*, 15(2): 311-326, 2011.

[7] Xingguang Peng*, Demin Xu. Intelligent Online Path Planning for UAVs in Adversarial Environments. *International Journal of Advanced Robotics Systems*, vol. 9, 2012.

Selected Conference Paper

[8] Yongjian Zhou, Tonghao Wang and Xingguang Peng*. MFEA-IG: A Multi-Task Algorithm for Mobile Agents Path Planning. *IEEE Congress on Evolutionary Computation*, 2020. Accepted

[9] Tao Wang, Xingguang Peng*, Yapei Wu, Jian Gao. A GP Based Two-Layer Framework for Data-Driven Modeling of Swarm Self-Organizing Rules. *IEEE Congress on Evolutionary Computation*, 2019.

[10] Yapei Wu, Xingguang Peng*, Demin Xu. Identifying Variables Interaction for Black-box Continuous Optimization with Mutual Information of Multiple Local Optima.*IEEE Symposium Series on Computational Intelligence (SSCI)*, 2019.

[11] Yapei Wu, Xingguang Peng*, Demin Xu. Identifying variable interaction using mutual information of multiple local optima. *Genetic and Evolutionary Computation Conference (GECCO) Companion*, 2019.

[12] Yapei Wu, Xingguang Peng*, Demin Xu. Cooperative Co-evolution for Large Scale Optimization with Dynamic Variable Grouping via Marginal Product Modeling. *IEEE Congress on Evolutionary Computation*, 2018.

[13] Xingguang Peng*, Yapei Wu. Large-scale Cooperative Co-evolution with Bi-objective Selection Based Imbalanced Multi-Modal Optimization. *IEEE Congress on Evolutionary Computation*, San Sebastian, Spain, 2017.

[14] Xingguang Peng*, Zhe Shi. Finding Informative Collaborators for Cooperative Co-evolutionary Algorithms Using a Dynamic Multi-population Framework. *IEEE Symposium Series on Computational Intelligence*, Dec. 5-8, 2016, Athens, Greece.

[15] Shuai Zhang, Xingguang Peng*, Yunke Huang, et al. Gene Regulatory Networks with Asymmetric Information for Swarm Robot Pattern Formation. *IEEE International Conference on Intelligent Robotics and Applications*, Plymouth, UK, 2015.

[16] Xingguang Peng*,Xiaokang Lei. Compensate Information from Multimodal Dynamic Landscapes: An Anti-Pathology Cooperative Coevolutionary Algorithm. *IEEE Congress on Evolutionary Computation*, Beijing, China, 2014.

[17] Xingguang Peng, Demin Xu, Weisheng Yan. Intelligent Flight for UAV via Integration of Dynamic MOEA, Bayesian Network and Fuzzy Logic. *50th IEEE Conference on Decision and Control and European Control Conference*, Orlando, FL, USA, December 2011.