梁佳瑜 副教授（博士）/计算机系/计算机科学与技术学院/天津工业大学

研究方向：人工智能（智能计算、计算机视觉/图像处理、数据分析）

联系方式：liangjiayu @tiangong.edu.cn

工作/教育经历：

2022.01-至今 **副教授 天津工业大学/计算机系**

研究方向：人工智能（主要为智能计算、计算机视觉/图像处理、数据分析）。

研究成果：请看项目信息、论文 [1-10,16]。

2018/09-2021.12 **讲师 天津工业大学/计算机系**

2014/02-2018/02 **博士 惠灵顿维多利亚大学/计算机科学**

课题：基于遗传规划算法的图像分割，研究成果发表在论文 [11-14,17-24]。

2007/09-2014/01 **本、硕 北京科技大学/电子信息工程**

课题：基于人脸图像的年龄估计，研究成果发表在论文 [14,15,24,25]。

研究方向介绍：

智能计算

又称计算智能（Computational Intelligence）。它是借鉴仿生学的思想，基于人们对生物体智能机理的认识，采用数值计算的方法去模拟和实现生物（人类、动物等）智能，从而将生物智慧、自然界的规律计算机程序化，实现设计最优化算法的目的。智能计算的三大基本研究领域包括神经计算、进化计算、模糊计算。实际应用领域包括智能制造、智能设计、搜索优化、调度、路径规划、预测等。

其中进化计算为扩展我们的技术能力提供了一个超越深度学习的机会。在引导式的，充满活力的探索的基础上，它能够创建比人类设计更令人惊讶和更复杂的解决方案。通过这项技术，人工智能有可能改善许多行业，如农业，医疗保健，金融，国土安全和在线零售。进化计算可以将我们带入未来的人工智能 - 创造性人工智能。

计算机视觉、图像处理

计算机视觉是目前人工智能领域最热门的研究方向之一，是一门研究如何让计算机达到人类那样“看”的学科。它是利用摄像机和电脑代替人眼使得计算机拥有类似于人类对目标进行分割、分类、识别、跟踪、判别决策等功能。应用领域十分广泛，包括制造业、智能化交通、监控、军事、医疗、自动驾驶等领域。图像处理与计算机视觉存在很多交叉，但在研究对象及处理工程、输入输出结果等方面有区别。

科研项目：

国家基金： 面向多动症的人体行为表达模型和病情量化函数设计方法研究（主持；项目批准号：61902281；项目起止年月：2020 年 01 月至 2022 年 12 月）。

天津市基金： 天津工大工业自主智能技术与系统中外联合研究中心建设（参与；项目批准号：19PTZWHZ00020；项目起止年月：2019 年 10 月至 2021 年 09 月）。

校级课题： “师生合作”教学资源建设课题（主持；项目批准号：19PTZWHZ00020；起止年月：2018 年 12 月至 2019 年 12 月）。

等

承担课程：

本科生：计算机视觉、专业综合实践（CV+NLP）、专业方向实习等。
留学生：Project design in computer science, Computer Vision (Introduction and Programming).

人才称号：

2018 年天津市“131”创新型人才培养工程第三层次人选

发表论文:

期刊论文

[1]Jiayu Liang, Yaxin Lu, Mingming Su. *HGA-LSTM: LSTM architecture and hyperparameter search by hybrid GA for air pollution prediction* [J]. Genetic Programming and Evolvable Machines, 2024, 25(2): 1-25.

[2]Jiayu Liang, Hanqi Cao, Yaxin Lu, Mingming Su. *Architecture search of accurate and lightweight CNNs using genetic algorithm* [J]. Genetic Programming and Evolvable Machines, 2024, 25(1): 1-22.

[3]Jiayu Liang, Ludi Zheng, Han Wu, Yu Xue. *Preference-driven multi-objective GP search for regression models with new dominance principle and performance indicators*[J]. Applied Intelligence, 2022(3): 1-23. (SCI 二区)

[4]Jiayu Liang, Yu Xue. *Bloat-aware GP-based methods with bloat quantification*[J]. Applied Intelligence, 2021(4): 4211–4225. (SCI 二区)

[5]Jiayu Liang, Yu Xue. *Multi-Objective Memetic Algorithms with Tree-Based Genetic Programming and Local Search for Symbolic Regression*[J]. Neural Processing Letters, 2021: 2197–2219.

[6]Jiayu Liang, Yu Xue, Jianming Wang. *Bi-objective memetic GP with dispersion-keeping Pareto evaluation for real-world regression.* Information Sciences, 2020. (SCI 一区)

[7]Jiayu Liang, Yu Xue. *An adaptive GP-based memetic algorithm for symbolic regression.* Applied Intelligence, 2020. (SCI二区)

[8]Jiayu Liang, Yuxin Liu, Yu Xue. *Preference-driven Pareto front exploitation for bloat control in genetic programming.* Applied Soft Computing, 2020. (SCI一区)

[9]Jiayu Liang, Yu Xue, Jianming Wang. *Genetic Programming based Feature Construction Methods for Foreground Object Segmentation.* Engineering Applications of Artificial Intelligence, 2019. (SCI一区)

[10]Jiayu Liang, Jixiang Wen, Zhe Wang, Jianming Wang. *Evolving semantic object segmentation methods automatically by genetic programming from images and image processing operators.* Soft Computing, 2019.

[11]Liang, Y., Zhang, M., Browne, W. N.. *Image Feature Selection using Genetic Programming for Figure-ground Segmentation*. Engineering Applications of Artificial Intelligence, 2017. (SCI 一区)

[12]Liang, Y., Zhang, M., Browne, W. N.. *Figure-ground Image Segmentation Using Feature-based Multi-objective Genetic Programming Techniques*. Neural Computing & Applications, 2017. (SCI 二区)

[13]Liang, Y., Zhang, M., Browne, W. N.. *Genetic Programming for Evolving Figure-ground Segmentors from Multiple Features*. Applied Soft Computing, 2016. (SCI 一区)

[14]Liang, Y., Wang, X., Zhang, L., Wang, Z.. *A hierarchical framework for facial age estimation*. Mathematical Problems in Engineering, 2014.

[15]Wang, X., Liang, Y., Zhang, L., Wang, Z.. *Lip AUs Detection by Boost-SVM and Gabor*. Journal of Software, 2012.

会议论文

[16]Han Wu, Jiayu Liang. *BMN_PAM: boundary matching network with pyramid attention module for temporal action proposal generation*. International Journal of Engineering Research And Management (IJERM), 2024.

[17]Liang, Y., Zhang, M., Browne, W. N.. *Learning Figure-ground Image Segmentors by Genetic Programming*. The Genetic and Evolutionary Computation Conference, 2017.

[18]Liang, Y., Zhang, M., Browne, W. N.. *Wrapper Feature Construction for Figure-Ground Image Segmentation using Genetic Programming*. Australasian Conference on Artificial Life and Computational Intelligence, 2017.
[19]Liang, Y., Zhang, M., Browne, W. N.. *Feature Construction using Genetic Programming for Figure-ground Image Segmentation*. In The 20th Asia-Pacific Symposium on Intelligent and Evolutionary Systems, 2016.
[20]Liang, Y., Zhang, M., Browne, W. N.. *Figure-ground Image Segmentation using Genetic Programming and Feature Selection*. In IEEE Congress on Evolutionary Computation, 2016.
[21]Liang, Y., Zhang, M., Browne, W. N.. *Multi-objective Genetic Programming for Figure-Ground Image Segmentation*. In Australasian Conference on Artificial Life and Computational Intelligence, 2016.
[22]Liang, Y., Zhang, M., Browne, W. N.. *A supervised figure-ground segmentation method using genetic programming*. In European Conference on the Applications of Evolutionary Computation, 2015.
[23]Liang, Y., Zhang, M., Browne, W. N.. *Image segmentation: a survey of methods based on evolutionary computation*. In Asia-Pacific Conference on Simulated Evolution and Learning, 2014.
[24]Liang, Y., Wang, X., Zhang, L., Wang, Z.. *A Hierarchical System for Age Estimation Based on Appearance Feature and Ranking-KNN*. International Conference on Intelligent Systems Design Engineering Applications, 2013.
[25]Wang, X., Liang, Y., Zheng, S., Wang, Z.. *Juvenile Detection by LBP and SVM.* IEEE International Conference on Cloud Computing and Intelligence Systems, 2012.

学术报告：

1.*计算机视觉前沿报告*，研讨会报告，天津工业大学，2024.
2.*进化计算及其应用*，研讨会报告，天津工业大学，2020.
3.*Figure-ground Image Segmentation using Genetic Programming and Feature Selection*, Conference Presentation, IEEE Congress on Evolutionary Computation, Canada, 2016.
4.*Feature Construction using Genetic Programming for Figure-ground Image Segmentation*, IEEE New Zealand Central Section Postgraduate Student Presentation, New Zealand, 2016.
5.*Multi-objective Genetic Programming for Figure-ground Image Segmentation*, IEEE New Zealand Central Section Postgraduate Student Presentation, New Zealand, 2015.
6.*Image Segmentation: A Survey of Methods based on Evolutionary Computation*, Conference Presentation, Asia-Pacific Conference on Simulated Evolution and Learning, New Zealand, 2014.