

吴凌云

个人简历

中国科学院
数学与系统科学研究院
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2022 年 10 月 5 日

简介

吴凌云, 中国科学院数学与系统科学研究院研究员, 博士生导师, 应用数学所所长助理, 生物信息学研究中心主任. 中国运筹学会常务理事, 常务副秘书长. 中国工业与应用数学学会副秘书长. 北京运筹学会副理事长. 2002 年于中国科学院数学与系统科学研究院获得运筹学与控制论专业理学博士学位. 曾在香港科技大学和美国康奈尔大学 Weill 医学院从事过博士后研究工作. 目前的研究兴趣是运筹学与信息科学, 特别是运筹学在生物信息学、物流科技与金融科技中的应用. 主要工作成果包括: DNA 测序算法, 蛋白质结构比对算法, 分子生物网络比对算法, 复杂疾病生物标记识别方法, 无人仓最优存储与拣选策略, 高效区块链技术等. 主持过青年基金, 面上基金, 重大研究计划培育项目等多项国家自然科学基金. 2014 年获中国运筹学会青年科技奖.

个人资料

姓名: 吴凌云

国籍: 中华人民共和国

出生时间地点: 1975 年 11 月 8 日, 中国福建

性别: 男

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教育经历

1997 – 2002 中国科学院数学与系统科学研究院
理学博士 运筹学专业
导师: 章祥荪研究员

1993 – 1997 武汉大学
学士 应用数学专业

目前职位

2015 – 目前 **研究员**
中国科学院数学与系统科学研究院

2016 – 目前 **主任**
中国科学院数学与系统科学研究院生物信息学研究中心

2017 – 目前

所长助理

中国科学院数学与系统科学研究院应用数学研究所

工作经历

2002 – 2003	Research Associate (博士后) 香港科技大学工业工程与工程管理系
2003 – 2005	博士后 中国科学院数学与系统科学研究院
2005 – 2007	助理研究员 中国科学院数学与系统科学研究院
2006	访问学者 复旦大学数学科学学院
2007	访问学者 香港中文大学数学系
2008 – 2009	Postdoctoral Fellow The Methodist Hospital Research Institute, Weill Medical College of Cornell University
2007 – 2015	副研究员 中国科学院数学与系统科学研究院
2007 – 2012	副主任 中国科学院数学与系统科学研究院应用数学研究所运筹学研究室
2012 – 2017	主任 中国科学院数学与系统科学研究院应用数学研究所运筹学研究室

资格证书

TOEFL	600 (57 63 60) TWE 4.0 (2001 年 10 月)
高级程序员	计算机软件专业技术资格和水平考试, 1996 国务院电子信息系统推广应用办公室颁发

社会活动

2009 – 至今	中国致公党, 党员
2014 – 2017	中国致公党中科院海淀支部, 委员
2017 – 至今	中国致公党中科院海淀支部, 副主委
2017 – 2021	中国致公党中科院委员会, 委员
2021 – 至今	中国致公党中科院委员会, 副主委
2017 – 至今	中国致公党北京市委员会科技工作委员会, 副主任

荣誉奖励

2007	中国科学院数学与系统科学研究院十大科研进展奖
2007	王宽诚教育基金会科研奖金项目
2008	中国科学院数学与系统科学研究院十大突出科研成果奖
2014	中国运筹学会科学技术奖青年科技奖

 学会组织

2012 – 目前	中国运筹学会 (ORSC), 理事
2016 – 目前	中国运筹学会 (ORSC), 常务理事
2020 – 目前	中国运筹学会 (ORSC), 常务副秘书长
2019 – 目前	中国工业与应用数学学会 (CSIAM), 副秘书长
2020 – 目前	北京运筹学会, 副理事长
2019 – 目前	中国工业与应用数学学会, 区块链专业委员会, 常务委员
2017 – 目前	中国生物化学与分子生物学会, 分子系统生物学专业委员会, 委员
2018 – 目前	中国医药生物技术协会, 基因检测技术分会, 委员
2006 – 目前	中国仿真学会, 生命系统建模仿真专业委员会, 委员
2011 – 2020	中国运筹学会, 计算系统生物学会, 副理事长

 期刊编委

2010 – 目前	运筹与管理
2016 – 目前	Scientific Reports

 期刊审稿

- Advances in Bioinformatics
- American Journal of Operations Research
- Annals of Biomedical Engineering
- Applied Mathematical Modelling
- Bioinformatics

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- BMC Bioinformatics
 - BMC Systems Biology
 - Chinese Journal of Cancer
 - Discrete Optimization
 - European Journal of Operational Research
 - Frontiers in Genetics
 - IEEE Transactions on Circuits and Systems I
 - IET Systems Biology
 - Information Sciences
 - Journal of Global Optimization
 - Journal of Molecular Cell Biology
 - Journal of Systems Science and Complexity
 - Journal of Theoretical Biology
 - Neural Processing Letters
 - Neurocomputing
 - Oncotarget
 - Proceedings of the IEEE
 - Quantitative Biology
 - Soft Computing
 - 应用数学学报
 - 数学研究与评论
 - 系统科学与数学
 - 运筹学报

- 自然科学进展
- 计算机工程与应用

研究兴趣

- 生物信息学
- 系统生物学
- 组合优化
- 人工神经网络
- 运筹学应用

项目

1999 – 2002	生物信息学中的重要数学问题 中国科学院数学与系统科学研究院资助.
1999 – 2002	神经网络在最优化中的应用 中国科学院数学与系统科学研究院资助.
2001	昆明中学教育水平评估 中国科学院研究生研究计划资助.
2002 – 2003	Decision Support Tools for Intelligent Multi-modal Transportation Logistics Management Systems 香港科技大学工业工程与工程管理系研究项目, 香港创新及技术基金 (Hong Kong Innovation Technology Fund) 资助.
2004 – 2005	中国电子政务战略规划研究 国务院信息化工作办公室资助.
2007 – 2008	税收收入预测方法研究 国家税务总局计划统计司资助.
2009 – 2010	安全生产数据挖掘与模型构建研究 北京市劳动保护科学研究所资助.
2009 – 2010	城市公共设施事故应急的多部门协同决策模型研究 北京城市系统工程研究中心资助.

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| 2017 – 2019 | 高效区块链网络技术研究
北京太一云科技有限公司资助. |
| 2017 – 2018 | 无人仓最优入库与拣选策略
北京京东世纪贸易有限公司资助. |
| 2019 – 2020 | 安全事故链分析模型研究
北京市劳动保护科学研究所资助. |
| 2019 – 2021 | AGV 仓储系统中订单分批问题的优化建模与算法研究
北京市智能物流系统协同创新中心资助. |

基金

- | | |
|-------------|---|
| 2004 – 2005 | DNA 测序算法研究
负责人, 研究基金, No. 20040350428
中国博士后科学基金会 |
| 2004 – 2006 | 供应链设计与管理的建模与优化
主要成员, 青年基金, No. 70302003
国家自然科学基金委员会 |
| 2005 – 2007 | 运筹学在生物信息学若干问题上的应用
主要成员, 面上项目, No. 10471141
国家自然科学基金委员会 |
| 2005 – 2008 | 生物信息学中的一些重要问题
主要成员, 知识创新工程重要方向项目
中国科学院 |
| 2006 – 2008 | 生物信息学中的单体型推断模型与算法研究
负责人, 青年基金, No. 60503004
国家自然科学基金委员会 |
| 2007 – 2009 | 基于三维结构和高通量数据的蛋白质功能标注与预测研究
主要成员, 国际 (地区) 合作研究与交流项目, No. 10711140116
国家自然科学基金委员会 |

- 2007 – 2010 **生物信息学与最优化方法**
主要成员, 重点项目, No. 10631070
国家自然科学基金委员会
- 2007 – 2011 **2 型糖尿病发生过程中的分子网络与作用机制研究**
参加人员, 课题, No. 2006CB503910
2 型糖尿病发生发展的分子机制研究
973 项目, No. 2006CB503900
中国科技部
- 2008 **单核苷酸多态性 (SNP) 芯片数据分析方法**
独立承担, 科研奖金项目
香港王宽诚教育基金会
- 2009 – 2012 **优化方法及其在信息技术中的应用**
主要成员, 知识创新工程重要方向项目, No. kjcx-yw-s7
中国科学院
- 2010 – 2012 **基于条件随机场的生物信息学方法**
负责人, 面上项目, No. 60970091
国家自然科学基金委员会
- 2012 – 2016 **复杂网络中的优化问题及其在系统生物学中的应用**
主要成员, 重点项目, No. 11131009
国家自然科学基金委员会
- 2014 – 2016 **动态网络生物标记识别的可计算建模与算法**
负责人, 重大研究计划培育项目, No. 91330114
国家自然科学基金委员会
- 2017 – 2021 **图理论和算法研究及其在生物信息学中的应用**
主要成员, 重点项目, No. 11631014
国家自然科学基金委员会
- 2017 – 2019 **癌症基因组大数据深度分析中的优化建模和算法研究**
主要成员, 国际 (地区) 合作研究与交流项目, No. 11661141019
国家自然科学基金委员会

- 2018 – 2019 干细胞增殖的计算建模及其在癌症演变动力学的应用
主要成员, 重大研究计划集成项目, No. 91730301
国家自然科学基金委员会
- 2020 – 2025 癌症调控网络构建与通路分析的图模型与算法
负责人, 课题, No. 2020YFA0712402
乳腺癌精准医学中的数学模型与算法研究
国家重点研发计划, No. 2020YFA0712400
中国科技部
- 2022 – 2026 区块链与数字货币中的博弈论
主要成员, 重大项目课题, No. 72192801
数字经济的博弈论基础
重大项目, No. 72192800
国家自然科学基金委员会
- 2023 – 2027 图网络理论和算法及其在生物医学问题中的应用
主要成员, 重点项目, No. 12231018
国家自然科学基金委员会

书

1. *Operations Research 50 周年纪念特刊中文译本*
主编: 章祥荪, 刘德刚, 章璟, 吴凌云, 王勇. 运筹与管理, 增刊, Vol. 13, 2004.
2. 信贷资产组合管理 (Credit Portfolio Management 中文译本)
Charles Simithson. 翻译: 张继红, 陈德胜, 吴凌云, 常良峰. 中国人民大学出版社, 北京, 2006.

论文集

3. *Operations Research and Its Applications, Lecture Notes in Operations Research 5*
Edited by Xiang-Sun Zhang, De-Gang Liu, and Ling-Yun Wu. Proceedings of the Fifth International Symposium of Operations Research and Its Applications, Tibet, China, 8–13 August, 2005. World Publishing Corporation, Beijing, 2005. (ISTP)
4. 中国运筹学会第 8 届学术交流会论文集
主编: 袁亚湘, 胡晓东, 刘德刚, 吴凌云. Global-Link Publishing Company, Hong Kong, 2006.
5. *Operations Research and Its Applications, Lecture Notes in Operations Research 6*
Edited by Xiang-Sun Zhang, De-Gang Liu, and Ling-Yun Wu. Proceedings of the Sixth International Symposium of Operations Research and Its Applications, Xinjiang, China, 8–12 August, 2006. World Publishing Corporation, Beijing, 2006. (ISTP)
6. *Optimization and Systems Biology, Lecture Notes in Operations Research 7*
Edited by Xiang-Sun Zhang, Luonan Chen, Ling-Yun Wu, and Yong Wang. Proceedings of the First International Symposium of Optimization and Systems Biology, Beijing, China, 8–10 August, 2007. World Publishing Corporation, Beijing, 2007. (ISTP)
7. *Optimization and Systems Biology, Lecture Notes in Operations Research 9*
Edited by Xiang-Sun Zhang, Luonan Chen, Ling-Yun Wu, and Yong Wang. Proceedings of the Second International Symposium of Optimization and Systems Biology, Lijiang, China, 31 October–3 November, 2008. World Publishing Corporation, Beijing, 2008. (ISTP)

8. Optimization and Systems Biology, *Lecture Notes in Operations Research 11*
Edited by Luonan Chen, Xiang-Sun Zhang, Ling-Yun Wu, and Yong Wang. Proceedings of the Third International Symposium of Optimization and Systems Biology, Zhangjiajie, China, 20–22 September, 2009. World Publishing Corporation, Beijing, 2009. (ISTP)
9. Operations Research and Its Applications, *Lecture Notes in Operations Research 12*
Edited by Xiang-Sun Zhang, De-Gang Liu, Ling-Yun Wu, and Yong Wang. Proceedings of the Ninth International Symposium of Operations Research and Its Applications, Chengdu-Jiuzhaigou, China, 19–23 August, 2010. World Publishing Corporation, Beijing, 2010. (ISTP)
10. Optimization and Systems Biology, *Lecture Notes in Operations Research 13*
Edited by Luonan Chen, Xiang-Sun Zhang, Bairong Shen, Ling-Yun Wu, and Yong Wang. Proceedings of the Fourth International Conference on Computational Systems Biology, Suzhou, China, 9–11 September, 2010. World Publishing Corporation, Beijing, 2010. (ISTP)
11. 中国运筹学会第 10 届学术交流会论文集
主编: 袁亚湘, 胡晓东, 吴凌云, 刘德刚. Global-Link Publishing Company, Hong Kong, 2010.
12. Operations Research and Its Applications, *Lecture Notes in Operations Research 14*
Edited by Xiang-Sun Zhang, De-Gang Liu, Ling-Yun Wu, and Yong Wang. Proceedings of the Tenth International Symposium of Operations Research and Its Applications, Dunhuang, China, 28–31 August, 2011. World Publishing Corporation, Beijing, 2011. (ISTP)
13. Proceedings of 2011 IEEE International Conference on Systems Biology
Edited by Luonan Chen, Xiang-Sun Zhang, Ling-Yun Wu, and Yong Wang. Zhuhai, China, 2–4 September, 2011. IEEE, 2011. (EI)
14. Proceedings of 2012 IEEE International Conference on Systems Biology
Edited by Luonan Chen, Xiang-Sun Zhang, Ling-Yun Wu, and Yong Wang. Xi'an, China, 18–20 August, 2012. IEEE, 2012. (EI)
15. Proceedings of 2013 International Conference on Systems Biology
Edited by Luonan Chen, Xiang-Sun Zhang, Ling-Yun Wu, and Yong Wang. Huangshan, China, 23–25 August, 2013. IEEE, 2013. (EI)

16. Proceedings of 2013 International Symposium of Operations Research and Its Applications
Edited by Xiang-Sun Zhang, De-Gang Liu, Ling-Yun Wu, and Yong Wang. Huangshan, China, 23–25 August, 2013. IET, 2013. (EI)
17. Proceedings of 2014 International Conference on Systems Biology
Edited by Luonan Chen, Xiang-Sun Zhang, Ling-Yun Wu, and Yong Wang. Qingdao, China, 24–27 October, 2014. IEEE, 2014. (EI)

章节

18. Computational Imaging and Modeling for System Biology
Ling-Yun Wu, Xiaobo Zhou, and Stephen T. C. Wong. Chapter 17 in *Elements of Computational Systems Biology*, Huma M. Lodhi and Stephen H. Muggleton (Editors). John Wiley & Sons, March, 2010.
19. Haplotype Inference Models and Algorithms
Ling-Yun Wu. Chapter 36 in *Algorithms in Computational Molecular Biology: Techniques, Approaches and Applications*, Mourad Elloumi and Albert Y. Zomaya (Editors). John Wiley & Sons, February, 2011.
20. Performing Network Alignments with R
Qiang Huang and Ling-Yun Wu. Chapter 7 in *Computational Network Analysis with R: Applications in Biology, Medicine and Chemistry*, Matthias Dehmer, Yongtang Shi, and Frank Emmert-Streib (Editors). John Wiley & Sons, October, 2016.

期刊论文

1. 章祥荪, 张继红, 吴凌云. PSBH 杂交测序中的组合优化问题及其计算方法. *系统科学与数学*, 22(3):258–269, 2002.
2. Ji-Hong Zhang, Ling-Yun Wu and Xiang-Sun Zhang. Reconstruction of DNA sequencing by hybridization. *Bioinformatics*, 19(1):14–21, 2003. (SCI)
3. Rui-Sheng Wang, Ling-Yun Wu, Ji-Hong Zhang, Xiang-Sun Zhang. Algorithms for the SNP haplotype assembly problem. *Applied Mathematics A Journal of Chinese Universities (Series A)*, 19(S):515–528, 2004.
4. Xiang-Sun Zhang, Yong Wang, Zhong-Wei Zhang, Ling-Yun Wu and Luonan Chen. Exploring protein's optimal HP configurations by self-organizing mapping. *Journal of Bioinformatics and Computational Biology*, 3(2):385–400, 2005.
5. Rui-Sheng Wang, Ling-Yun Wu, Zhen-Ping Li and Xiang-Sun Zhang. Haplotype reconstruction from SNP fragments by minimum error correction. *Bioinformatics*, 21(10):2456–2462, 2005. (SCI)
6. Yu-Ying Zhao, Ling-Yun Wu, Ji-Hong Zhang, Rui-Sheng Wang and Xiang-Sun Zhang. Haplotype assembly from aligned weighted SNP fragments. *Computational Biology and Chemistry*, 29(4):281–287, 2005. (SCI, EI)
7. 张继红, 吴凌云, 章祥荪. 允许长度估计误差的 SBH 最优重构问题及其算法. *应用数学学报*, 28(3):385–395, 2005.
8. 王勇, 詹钟炜, 吴凌云, 章祥荪. 改进的自组织映射 (SOM) 蛋白质折叠算法和计算实现. *系统科学与数学*, 25(5):562–573, 2005.
9. Luonan Chen, Ling-Yun Wu, Ruiqi Wang, Yong Wang, Shihua Zhang, Xiang-Sun Zhang. Comparison of protein structures by multi-objective optimization. *Genome Informatics*, 16(2):114–124, 2005.
10. Ling-Yun Wu, Xiang-Sun Zhang and Ju-Liang Zhang. Capacitated facility location problem with general setup cost. *Computers & Operations Research*, 33(5):1226–1241, 2006. (SCI, EI)
11. Xiang-Sun Zhang, Rui-Sheng Wang, Ling-Yun Wu and Luonan Chen. Models and algorithms for the haplotyping problem. *Current Bioinformatics*, 1(1):105–114, 2006. (SCI)

12. Yong Wang, Ling-Yun Wu, Xiang-Sun Zhang and Luonan Chen. Exploring the classification of protein structures on geometric patterns by neural networks. *International Journal of Computational Intelligence Research*, 2(1):105–109, 2006.
13. Luonan Chen, Ling-Yun Wu, Yong Wang and Xiang-Sun Zhang. Inferring protein interactions from experimental data by association probabilistic method. *Proteins: Structure, Function, and Bioinformatics*, 62:833–837, 2006. (SCI)
14. Luonan Chen, Ling-Yun Wu, Yong Wang, Shihua Zhang and Xiang-Sun Zhang. Revealing divergent evolution, identifying circular permutations and detecting active-sites by protein structure comparison. *BMC Structural Biology*, 6:18, 2006. (SCI)
15. 詹钟炜, 王勇, 吴凌云, 章祥荪. 政府网站评估 DEA 模型. *运筹与管理*, 15(4):97–102, 2006.
16. Xiang-Sun Zhang, Rui-Sheng Wang, Ling-Yun Wu and Wei Zhang. Minimum conflict individual haplotyping from SNP fragments and related genotype. *Evolutionary Bioinformatics Online*, 2:271–280, 2006.
17. Zhen-Ping Li, Ling-Yun Wu, Yu-Ying Zhao and Xiang-Sun Zhang. A dynamic programming algorithm for the k-haplotyping problem. *Acta Mathematicae Applicatae Sinica*, 22(3):405–412, 2006.
18. Rui-Sheng Wang, Ling-Yun Wu, Xiang-Sun Zhang and Luonan Chen. A Markov chain model for haplotype assembly from SNP fragments. *Genome Informatics*, 17(2):162–171, 2006.
19. Yong Wang, Ling-Yun Wu, Luonan Chen and Xiang-Sun Zhang. Supervised classification of protein structures based on convex hull representation. *International Journal of Bioinformatics Research and Applications*, 3(2):123–144, 2007.
20. Ji-Hong Zhang, Ling-Yun Wu, Yu-Ying Zhao and Xiang-Sun Zhang. An optimization approach to the reconstruction of positional DNA sequencing by hybridization with errors. *European Journal of Operational Research*, 182(1):413–427, 2007. (SCI, EI)
21. Rui-Sheng Wang, Yong Wang, Ling-Yun Wu, Xiang-Sun Zhang, and Luonan Chen. Analysis on multi-domain cooperation for predicting protein-protein interactions. *BMC Bioinformatics*, 8:391, 2007. (SCI)

22. Ju-Liang Zhang, Ling-Yun Wu and Xiang-Sun Zhang. A trust region method for optimization problem with singular solutions. *Applied Mathematics and Optimization*, 56(3):379–394, 2007. (SCI, EI)
23. Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Luonan Chen, and Xiang-Sun Zhang. Predicting gene ontology functions from protein's regional surface structures. *BMC Bioinformatics*, 8:475, 2007. (SCI)
24. Ruxin Qin, Jing Chen, Naiyang Deng, Ling-Yun Wu. New strategy for predicting protein structural class. *Journal of Harbin Institute of Technology (New Series)*, 14(S2):1–4, 2007. (EI)
25. Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Xiang-Sun Zhang, and Luonan Chen. Analysis of protein surface patterns by pocket similarity network. *Protein and Peptide Letters*, 15(5):448–455, 2008. (SCI)
26. Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Xiang-Sun Zhang, and Luonan Chen. Bridging protein local structures and protein functions. *Amino Acids*, 35(3):627–650, 2008. (SCI)
27. Ji-Hong Zhang, Ling-Yun Wu, Jian Chen, and Xiang-Sun Zhang. A fast haplotype inference method for large population genotype data. *Computational Statistics and Data Analysis*, 52(11):4891–4902, 2008. (SCI)
28. Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Luonan Chen, and Xiang-Sun Zhang. Protein cavity clustering based on community structure of pocket similarity network. *International Journal of Bioinformatics Research and Applications*, 4(4):445–460, 2008.
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