

张正江博士、教师简历

◆ 基本信息

姓 名: 张正江

性 别: 男

出生年月: 1982.09

民 族: 汉族

职称职务: 教授

最后学历学位: 博士研究生

工作单位: 温州大学电气与电子工程学院

通信地址: 浙江温州高教园区温州大学南校区 1 号楼

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◆ 主要教育与工作经历

工作经历

2022.12-至今: 温州大学 电气与电子工程学院 教授

2017.01 – 2022.12: 温州大学 电气与电子工程学院 副教授

2010.07 – 2017.01: 温州大学 物理与电子信息工程学院 讲师

2015.07 – 2015.08: 台湾中原大学 计算机程序系统工程研究室 访问学者

2013.08 – 2014.08: 台湾中原大学 计算机程序系统工程研究室 博士后

教育经历

2006.09 – 2010.06: 浙江大学 控制系 工业控制研究所 博士研究生 (提前攻博)

2004.09 – 2006.06: 浙江大学 控制系 工业控制研究所 硕士研究生

2000.09 – 2004.06: 桂林电子工业学院 电气工程及其自动化 本科

◆ 获奖情况

1. 2022 年度温州大学优秀党务工作者
2. 2022 年度温州大学“最爱学生喜爱的老师”
3. “高海拔高温差光伏发电系统关键技术及应用”, 2021 年度中国发明协会发明创业奖 · 创新奖一等奖, 排名 3/6
4. 2020 年度温州大学优秀共产党员

5. “海岛/岸基微电网系统与模块化成套设备”，2019 年度教育部科技进步奖二等奖，排名 7/13
6. 2017 年度温州大学“步青教学卓越奖”之最佳教学奖
7. “海岛/岸基大功率特种电源系统关键技术与成套装备及应用”，2017 年度中国机械工业科学技术奖特等奖，排名 31/35
8. “海岸工程兆瓦级特种变流电源关键技术及应用”，2015 年度教育部科技进步奖一等奖，排名 8/15
9. “港口电子式供电装备系统绿色变换技术及应用”，2014 年度中国电子学会电子信息科学技术奖二等奖，排名 7/10
10. “Particle Filter Based Fault Detection and Diagnosis for Nonlinear Dynamic System”，The 25th Chinese Process Control Conference (第 25 届中国过程控制会议) “Keynote paper” (Aug. 9-11, 2014, Dalian, China)
11. 2012 年度温州大学物理与电子信息学院第十六届“物华园丁奖”

✧ 研究方向

- 工业过程智能建模、控制与优化
- 数据校正与参数估计
- 非线性滤波方法
- 新能源系统建模与控制

✧ 科研教改项目

1. 工业控制技术国家重点实验室开放式课题：“部分遮蔽下光伏阵列精确机理建模与鲁棒参数估计方法”(No. ICT2022B65), 2022.03-2023.03, 2.68 万, 项目主持人(1/2).
2. 教育部产学协同育人项目：“IPS 互联电力系统实验室与产学研实践教育体系构建”，(No. 9794c34e-0f0f-4346-b07d-8fb123175deb), 2021.09-2022.09, 20 万, 项目主持人(1/6).
3. 国家自然科学基金：“面向苯乙烯聚合反应过程机理建模的鲁棒参数估计方法”(61703309), 2018.01-2020.12, 20 万, 项目主持人(1/8).
4. 国家自然科学基金：“面向空分设备变负荷操作优化的参数估计理论与方法”(No.61374167), 2014.01-2017.12, 80 万, 合作单位负责人(2/9).
5. 浙江省科技计划项目：“面向光伏发电系统最大功率跟踪的记忆增强型全局优化技术的研发与工程应用”(No. 2015C31157), 2015.01-2018.10, 15 万, 项目主持人(1/10)
6. 浙江省自然科学基金：“过程系统变负荷下的数据校正与参数估计方法研究”(No. LQ14F030006), 2014.01-2016.12, 5 万, 项目主持人(1/6).
7. 工业控制技术国家重点实验室开放式课题：“过程系统参数估计问题的序列子问题规划求解方法研究”(No. ICT1112), 2011.05-2013.06, 4 万, 项目主持人(1/2).
8. 温州大学教改项目：“《自动控制原理》课程教改与实践”(No. 12jg51B), 2012.05-2014.11, 0.3 万, 项目主持人(1/6).

✧ 代表性学术论文

Paper Citation Report (引用报告) (ResearcherID)

2023 年

- [1]. Tao Xia, Zhengjiang Zhang*, Zhihui Hong*, Shipei Huang. Dynamic Data Reconciliation to Enhance the Performance of Model Free Adaptive Control. *Measurement Science and Technology*, **2023**, Vol. 34, No. 6, 065105. (SCI 3 区)
- [2]. Zhenhui Zhang, Zhengjiang Zhang, Sheng Zhao, Zhihui Hong, Shipei Huang, Quanfang Li. Full Feedback Dynamic Neural Network with Exogenous Inputs for Dynamic Data driven Modeling in Nonlinear Dynamic Power Systems. *IEEJ Transactions on Electrical and Electronic Engineering*, **2023**, Accepted. (SCI 4 区)
- [3]. Wangwang Zhu, Zhengjiang Zhang*, Junghui Chen*, Liu Yi, Tao Xia, Antonios Armaou, Sheng Zhao. Using dynamic data reconciliation to improve the performance of PID feedback control systems with Gaussian/non-Gaussian distributed disturbance and measurement noise. *ISA Transactions*, **2023**, in press (DOI: 10.1016/j.isatra.2023.01.015). (SCI 2 区, TOP)
- [4]. Tao Xia, Zhengjiang Zhang*, Zhihui Hong, Shipei Huang. Design of fractional order PID controller based on minimum variance control and application of dynamic data reconciliation for improving control performance. *ISA Transactions*, **2023**, Vol. 133, 91-101. (SCI 2 区, TOP)

2022 年

- [5]. Wangwang Zhu, Zhengjiang Zhang*, Liu Yi*. Dynamic Data Reconciliation for Improving the Prediction Performance of the Data-Driven Model on Distributed Product Outputs. *Industrial & Engineering Chemistry Research*, **2022**, Vol. 61, No. 51, 18780-18794. (SCI 3 区, 期刊封面论文)
- [6]. Guiting Hu, Xu Luping*, Zhengjiang Zhang*. Correntropy based Elman neural network for dynamic data reconciliation with gross errors. *Journal of the Taiwan Institute of Chemical Engineers*, **2022**, Vol. 140, 104568. (SCI 2 区)

2021 年

- [7]. Wangwang Zhu, Zhengjiang Zhang*, Junghui Chen*, Sheng Zhao, Shipei Huang. Dynamic Data Reconciliation to Enhance the Performance of Feedforward/Feedback Control Systems with Measurement Noise, *Journal of Process Control*, **2021**, Vol. 108, 12-24. (SCI 3 区)
- [8]. Guiting Hu, Zhengjiang Zhang*, Junghui Chen*, Zhenhui Zhang, Antonios Armaou, Zhengbing Yan. Elman Neural Networks Combined with Extended Kalman Filters for Data-Driven Dynamic Data Reconciliation in Nonlinear Dynamic Process Systems, *Industrial & Engineering Chemistry Research*, **2021**, Vol. 60, No. 42, 15219-15235. (SCI 3 区)
- [9]. Wangwang Zhu, Zhengjiang Zhang*, Antonios Armaou, Guiting Hu, Sheng Zhao, Shipei Huang. Dynamic data reconciliation to improve the result of controller performance assessment based on GMVC, *ISA Transactions*, **2021**, Vol. 117, 288-302. (SCI 2 区)

2020 年

- [10]. Guiting Hu, Zhengjiang Zhang*, Antonios Armaou, Zhengbing Yan. Robust Extended Kalman Filter Based State Estimation for Nonlinear Dynamic Processes with Measurements Corrupted by Gross Errors, *Journal of The Taiwan Institute of Chemical Engineers*, **2020**, Vol. 106, 20-33. (SCI 2 区)
- [11]. Zhengjiang Zhang, Lester Lik Teck Chan, Junghui Chen*, and Zhijiang Shao. Correntropy Based Data Reconciliation and Gross Error Detection for Bilinear Systems,

Chemical Engineering Science, **2020**, Vol. 212, 115327. (SCI 2区, TOP)

- [12].Guanghui Yang, Zhengjiang Zhang^{*}, Sheng Zhao^{*}, Wangwang Zhu, Chong Chen. Dynamic Data Reconciliation to Decrease the Effect of Measurement Noise on Controller Performance Assessment, *IEEJ Transactions on Electrical and Electronic Engineering*, **2020**, Vol. 15, No. 5, 714-722. (SCI 4区)

2019 年

- [13].Zhengjiang Zhang^{*}, Junghui Chen^{*}, Enhancing Performance of Generalized Minimum Variance Control via Dynamic Data Reconciliation, *Journal of the Franklin Institute*, **2019**, Vol. 356, No. 15, 8829-8854. (SCI 2区, TOP)
- [14].Zhengjiang Zhang^{*}, Guiting Hu, Qiang Chen, Zhengbing Yan, Correntropy-based parameter estimation for photovoltaic array model considering partial shading condition, *IET Renewable Power Generation*, **2019**, Vol. 13, No. 18, 1309-1316. (SCI 3区)
- [15].Zhengjiang Zhang, Junghui Chen^{*}, Fault detection and diagnosis based on particle filters combined with interactive multiple-model estimation in dynamic process systems, *ISA Transactions*, **2019**, Vol. 85, 247-261. (SCI 2区)

2010-2018 年

- [16].Zhiliang Zhu, Zhiqiang Meng, Zhengjiang Zhang^{*}, Junghui Chen^{*}, and Yuxing Dai, Robust Particle Filter for State Estimation Using Measurements with Different Types of Gross Errors, *ISA Transactions*, **2017**, Vol. 69, 281-295. (SCI 2区)
- [17].Zhiliang Zhu, Zhiqiang Meng, Tingting Cao, Zhengjiang Zhang^{*}, Yuxing Dai, Particle filter based robust state and parameter estimation for nonlinear process systems with variable parameters, *Measurement Science and Technology*, **2017**, Vol. 28, No. 6, 065003. (SCI 3区)
- [18].Zhengjiang Zhang, Ying-Yu Chuang, Junghui Chen^{*}, Using Clustering Based Logical Equation Set to Decompose Large Scale Chemical Processes for Parallel Solving Data Reconciliation and Parameter Estimation Problem, *Chemical Engineering Research and Design*, **2017**, Vol. 120, 396-409. (SCI 2区)
- [19].Zhengjiang Zhang, Junghui Chen^{*}, Dynamic Data Reconciliation for Enhancing Performance of Minimum Variance Control in Univariate and Multivariate Systems, *Industrial & Engineering Chemistry Research*, **2016**, Vol. 55, No. 41, 10990-11002. (SCI 2区, TOP)
- [20].Zhengjiang Zhang, Zhijiang Shao, Junghui Chen^{*}, Programming Strategies of Sequential Incremental-Scale Sub-problems for Large Scale Data Reconciliation and Parameter Estimation with Multi-Operational Conditions, *Industrial & Engineering Chemistry Research*, **2015**, Vol. 54, No. 21, 5697-5709. (SCI 2区, TOP)
- [21].Zhengjiang Zhang, Junghui Chen^{*}, Correntropy based data reconciliation and gross error detection and identification for nonlinear dynamic processes, *Computers & Chemical Engineering*, **2015**, Vol. 75, 120 -134. (SCI 2区)
- [22].Zhengjiang Zhang, Junghui Chen^{*}, Simultaneous Data Reconciliation and Gross Error Detection for Dynamic Systems Using Particle Filter and Measurement Test, *Computers & Chemical Engineering*, **2014**, Vol. 69, 66-74. (SCI 2区)
- [23].Zhengjiang Zhang, Ying-Yu Chuang, Junghui Chen^{*}, Methodology of Data Reconciliation and Parameter Estimation for Process Systems with Multi-Operating Conditions, *Chemometrics and Intelligent Laboratory Systems*, **2014**, Vol. 137, 110-119. (SCI 2区)
- [24].Zhengjiang Zhang, Ying-Yu Chuang, Junghui Chen^{*}, Pervasive Knowledge Discovery by Just-in-time Learning to Solve Simultaneous Data Reconciliation and Parameter Estimation of Industrial Processes, *Industrial & Engineering Chemistry Research*, **2014**, Vol. 53, No. 24, 10194-10205. (SCI 2区, TOP)

[25].Zhengjiang Zhang, Zhijiang Shao*, Xi Chen, Kexin Wang, Jixin Qian, Quasi-weighted least squares estimator for data reconciliation, *Computers & Chemical Engineering*, **2010**, Vol. 34, No. 2, 154-162. (SCI 2 区)

(注: SCI 期刊分区参考发表当年中科院大类分区)

✧ 授权发明专利

1. 张正江、祝旺旺、戴瑜兴、赵升、闫正兵、黄世沛、王环, 一种用于逆变器控制系统基于模型的鲁棒滤波方法, 专利号: ZL202010699871.2, 申请日: 20200720, 授权日: 20220603, 授权公告号: CN 111812984B
2. 张正江、陈倩、曾国强、闫正兵、戴瑜兴、张海洲、郑崇伟, 一种基于模型辨识的光伏发电系统最大功率跟踪方法, 专利号: ZL201610905066.4, 申请日: 20161017, 授权日: 20180410, 授权公告号: CN 106452355B
3. 赵升、张正江、朱翔鸥、陈威、吴桂初, 一种用于交流恒流源电流反馈信号的动态数据校正方法, 专利号: ZL 201810588167.2.
4. 曾国强、陈杰、张正江、戴瑜兴、郑崇伟、陆康迪、蓝燕婷、叶双, 一种用于电力网络故障诊断的社团自组织检测方法, 专利号: ZL 201310299446.4.
5. 戴瑜兴、陈义财、郑崇伟、温烨婷、张正江, 一种变流器并联运行切换控制装置及其切换控制方法, 专利号: ZL 201310187901.1.
6. 曾国强、陈杰、戴瑜兴、张正江、郑崇伟、陆康迪、彭文文、彭子舜, 用于兆瓦级逆变系统的极值优化自整定数字 PID 控制方法, 专利号: ZL201310300513.X.
7. 邵之江、张正江、陈曦、祝铃钰、徐祖华、赵均、赵豫红、周立芳、纪彭、钱积新, 一种用于化工流程系统变负荷下的数据校正方法, 专利号: ZL 200910095679.6.

✧ 学术兼职

1. 中国系统工程学会会员; 中国电源学会高级会员
2. 电气数字化设计技术国家地方联合工程实验室副主任、机械工业用户侧光伏微网工程中心副主任、国家自然科学基金项目同行评审专家、浙江省基础公益研究计划项目评审专家; 受邀担任 ISA Transactions、IEEE Transactions on Signal Processing、Industrial & Engineering Chemistry Research、Energy、Chemical Engineering Research and Design、Neurocomputing、Journal of Control Science and Engineering、Chinese Journal of Chemical Engineering 等国际学术期刊评审人; 受邀担任 IEEE CDC、CCC、CPCC、DDCLS 等国内外学术会议论文评审人。

✧ 担任课程教学

本科生课程: 《自动控制原理》、《信号与系统(双语)》

研究生课程: 《智能控制理论与技术》、《Modern Control Systems》

✧ 学生培养情况

目前指导温州大学硕士生 6 名;

已指导台湾中原大学硕士 1 名; 已指导温州大学硕士 7 名。

曾经担任本科生 10 自动化、13 电气工程本 2、20 电研等班级班主任。

研究生培养情况表

序号	研究生	学校、学位	学习情况	论文题目	合作导师
1	莊英譽	台湾中原大学硕士	2012.09-2015.07 毕业去向： 台湾中华化学工业股份有限公司	基于模型的大规模系统数据校正与参数估计	台湾中原大学陈荣辉
2	曹婷婷	温州大学硕士	2013.09-2016.06 毕业去向： 北京神舟智汇科技有限公司	基于粒子滤波的非线性系统状态与参数估计方法	温州大学郑崇伟
3	张建	温州大学硕士	2013.09-2016.06 毕业去向： 浙江省嘉兴市道路运输管理局	测量噪声对 GMVC 控制器性能影响分析与改进方法	温州大学郑崇伟
4	陈倩	温州大学硕士生	2014.09-2017.06 毕业去向： 石家庄佳诚网络技术有限公司	基于相关熵的光伏阵列模型鲁棒参数辨识方法	温州大学郑崇伟
5	张海洲	温州大学硕士生	2014.09-2017.06 毕业去向： 长园深瑞继保自动化有限公司	光伏发电系统改进型最大功率跟踪算法的研究与应用	温州大学郑崇伟
6	胡桂廷	温州大学硕士生	2018.09-2021.06 毕业去向： 西安电子科技大学读博	面向非线性动态系统状态估计的鲁棒扩展卡尔曼滤波方法	
7	祝旺旺	温州大学硕士生	2018.09-2021.06 毕业去向： 浙江工业大学读博	用于提高控制系统性能的动态数据校正方法	
8	郑银燕	温州大学硕士生	2019.09- 毕业去向： 杭州中恒电气股份有限公司	面向光伏阵列机理建模的鲁棒参数估计与智能优化求解方法	
9	张振慧	温州大学硕士生	2020.09- 在读	鲁棒无迹卡尔曼滤波用于电力系统的状态估计	
10	夏涛	温州大学硕士生	2020.09- 在读	分数阶 PID 控制器设计与动态数据校正提升方法	
11	贺亦甲	温州大学硕士生	2020.09- 在读	粒子滤波用于电池荷电状态估计	
12	黎东阳	温州大学硕士生	2020.09- 在读	微电网控制器设计与性能提升方法	
13	刘康	温州大学硕士生	2021.09- 在读	DC/DC 变换器设计与控制方法	
14	叶家琪	温州大学硕士生	2022.09- 在读	参考代价粒子滤波用于提升控制器性能	

研究生代表性成果列表:

1. **Tao Xia**, Zhengjiang Zhang*, Zhihui Hong*, Shipei Huang. Dynamic Data Reconciliation to Enhance the Performance of Model Free Adaptive Control. *Measurement Science and Technology*, 2023, Vol. 34, No. 6, 065105. (SCI 3
2. **Zhenhui Zhang**, Zhengjiang Zhang, Sheng Zhao, Zhihui Hong, Shipei Huang, Quanfang Li. Full Feedback Dynamic Neural Network with Exogenous Inputs for Dynamic Data driven Modeling in Nonlinear Dynamic Power Systems. *IEEJ Transactions on Electrical and Electronic Engineering*, 2023, Accepted. (SCI 4
3. **Wangwang Zhu**, Zhengjiang Zhang*, Junghui Chen*, Liu Yi, Tao Xia, Antonios Armaou, Sheng Zhao. Using dynamic data reconciliation to improve the performance of PID feedback control systems with Gaussian/non-Gaussian distributed disturbance and measurement noise. *ISA Transactions*, 2023, in press. (SCI 2
4. **Wangwang Zhu**, Zhengjiang Zhang*, Liu Yi*. Dynamic Data Reconciliation for Improving the Prediction Performance of the Data-Driven Model on Distributed Product Outputs. *Industrial & Engineering Chemistry Research*, 2022, Vol. 61, No. 51, 18780-18794. (SCI 3
5. **Guiting Hu**, Xu Luping*, Zhengjiang Zhang*. Correntropy based Elman neural network for dynamic data reconciliation with gross errors. *Journal of the Taiwan Institute of Chemical Engineers*, 2022, Vol. 140, 104568. (SCI 2
6. **Tao Xia**, Zhengjiang Zhang*, Zhihui Hong, Shipei Huang. Design of fractional order PID controller based on minimum variance control and application of dynamic data reconciliation for improving control performance. *ISA transactions*, 2022, in press. (SCI 2
7. **Zhenhui Zhang**, Zhengjiang Zhang, Zhihui Hong*. Unscented Kalman Filter-Based Robust State and Parameter Estimation for Free Radical Polymerization of Styrene with Variable Parameters. *Polymers*, 2022, Vol. 14, No. 5, 973.
8. **Yinyan Zheng**, Zhengjiang Zhang, Ping Wu*, Guiting Hu, Yuxing Dai. Robust Parameter Estimation for Photovoltaic Array Model under Partial Shading Condition. *IEEJ Transactions on Electrical and Electronic Engineering*, 2022, Vol. 17, No. 7, 1016-1026.
9. **Guiting Hu**, Zhengjiang Zhang*, Junghui Chen*, Zhenhui Zhang, Antonios Armaou, Zhengbing Yan. Elman Neural Networks Combined with Extended Kalman Filters for Data-Driven Dynamic Data Reconciliation in Nonlinear Dynamic Process Systems, *Industrial & Engineering Chemistry Research*, 2021, Vol. 60, No. 42, 15219-15235.
10. **Guiting Hu**, Zhengjiang Zhang*, Antonios Armaou, Zhengbing Yan. Robust Extended Kalman Filter Based State Estimation for Nonlinear Dynamic Processes with Measurements Corrupted by Gross Errors, *Journal of The Taiwan Institute of Chemical Engineers*, 2020, Vol. 106, 20-33.
11. Zhengjiang Zhang*, **Guiting Hu**, Qiang Chen, Zhengbing Yan, Correntropy-based parameter estimation for photovoltaic array model considering partial shading condition, *IET Renewable Power Generation*, 2019, Vol. 13, No. 18, 1309-1316.
12. **Wangwang Zhu**, Zhengjiang Zhang*, Junghui Chen*, Sheng Zhao, Shipei Huang. Dynamic Data Reconciliation to Enhance the Performance of Feedforward/Feedback Control Systems with Measurement Noise, *Journal of Process Control*, 2021, Vol. 108, 12-24.
13. **Wangwang Zhu**, Zhengjiang Zhang*, Antonios Armaou, Guiting Hu, Sheng Zhao, Shipei Huang. Dynamic data reconciliation to improve the result of controller performance assessment based on GMVC, *ISA Transactions*, 2021, Vol. 117, 288-302..
14. Zhengjiang Zhang, **Ying-Yu Chuang**, Junghui Chen*, Using Clustering Based Logical

Equation Set to Decompose Large Scale Chemical Processes for Parallel Solving Data Reconciliation and Parameter Estimation Problem, *Chemical Engineering Research and Design*, **2017**, Vol. 120, 396-409.

15. Zhengjiang Zhang, **Ying-Yu Chuang**, Junghui Chen^{*}, Methodology of Data Reconciliation and Parameter Estimation for Process Systems with Multi-Operating Conditions, *Chemometrics and Intelligent Laboratory Systems*, **2014**, Vol. 137, 110-119.
16. Zhengjiang Zhang, **Ying-Yu Chuang**, Junghui Chen^{*}, Pervasive Knowledge Discovery by Just-in-time Learning to Solve Simultaneous Data Reconciliation and Parameter Estimation of Industrial Processes, *Industrial & Engineering Chemistry Research*, **2014**, Vol. 53, No. 24, 10194-10205.
17. Zhiliang Zhu, Zhiqiang Meng, **Tingting Cao**, Zhengjiang Zhang^{*}, Yuxing Dai, Particle filter based robust state and parameter estimation for nonlinear process systems with variable parameters, *Measurement Science and Technology*, **2017**, Vol. 28, No. 6, 065003.

本科生代表性成果列表:

1. **Guanghui Yang**, Zhengjiang Zhang^{*}, Sheng Zhao^{*}, Wangwang Zhu, Chong Chen. Dynamic Data Reconciliation to Decrease the Effect of Measurement Noise on Controller Performance Assessment, *IEEJ Transactions on Electrical and Electronic Engineering*, 2020, Vol. 15, No. 5, 714-722. (SCI)
2. **杨光辉**, 测量噪声对基于 MVC 的控制器性能评估结果影响分析与改进方法, 2018 年温州大学校级优秀毕业设计 (论文)
3. **朱建波**, 基于模型辨识光伏发电最大功率跟踪的研究(2017R426019), 2017 年浙江省大学生科技创新(新苗人才计划)项目
4. **楼云峰**, 过程系统模型修正问题高效求解方法的研究(2013R424018), 2013 年浙江省大学生科技创新(新苗人才计划)项目
5. **林超**, 光伏发电系统的最大功率跟踪方法研究(2012R424007), 2012 年浙江省大学生科技创新(新苗人才计划)项目
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