2026年第十六届MathorCup数学应用挑战赛

获奖证书

哈尔滨工业大学威海

参赛队员：陈友珍 杨阿吉 指导老师：朱建华

荣获2026年第十六届MathorCup数学应用挑战赛 研究生 组

区域赛二等奖

中国优选法统筹法与经济数学研究会

2026年6月

证书编号：MC2607386

证明

兹证明陈友珍同学，学号25S030149，是哈尔滨工业大学（威海）经济管理学院工商管理专业硕士研究生。

该生于2025年9月至2026年9月担任经济管理学院研究生党支部组织委员。

特此证明。

中共哈尔滨工业大学（威海）经济管理学院委员会

2026年9月7日

MRP FIVE MINUTE RESEARCH PRESENTATION
FOUNDED BY CHINA EAP ASSOCIATION

No:2026HGYW002

2026 UNIVERSITY STUDENT COMPETITION FIVE MINUTE RESEARCH PRESENTATION

FIRST PRIZE

presented to

Chen Youzhen, Yang Aji, Liang Junwen

at

Harbin Institute of Technology, Weihai

for

Optimizing Supply-Demand Mismatches and Local Queuing Bottlenecks for Public EV Charging Infrastructure in Highly Electrified Cities

哈尔滨工业大学（威海）

陈友珍、杨阿吉、梁君雯　同学

在第九届“全国大学生5分钟科研创新英语演讲”大赛中，演讲的

《高电动化城市公共电动汽车充电基础设施供需失衡与局部排队瓶颈协同优化》

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Aug. 31st, 2026
2026年8月31日

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陈友珍同学：

在2025-2026年度春季运动会中，你以过人实力与顽强意志闪耀赛场。奋勇拼搏，一往无前，在竞争之中不断突破，用汗水与拼搏成就个人风采！

成绩斐然，表现突出，荣获“优秀个人”称号！

哈尔滨工业大学(威海)经济管理学院

二〇二六年六月九日

HARBIN INSTITUTE OF TECHNOLOGY

哈爾濱工業大學(威海)

陈友珍同学：

在2025-2026年度春季运动会中，你所在的队伍以卓越的团队精神和出色的竞技表现征服了赛场。相互扶持，彼此激励，在挑战面前永不退缩，书写了团队的荣耀！

成绩斐然，表现突出，荣获“优秀团队”称号！

团队成员：陈友珍 朱天毅 黄奕白 王怡恒 杨昊 王沛帆 王宏宇 梁雪 冯正宽 史超星 段鹏翔 杨奇锟 罗文彦博 贾峦卜 张国豪

哈尔滨工业大学(威海)经济管理学院

二〇二六年六月九日

情况属实 朱建华

CC: mktres09@gmail.com

Ms. Ref. No.: CAIE-D-25-07307R2

Title:A disturbance-contingent tri-layer control method for robust Customer-to-Manufacturer operations under demand uncertainty and equipment failures

Computers & Industrial Engineering

Dear Dr. Zhu,

I am pleased to confirm that your paper "A disturbance-contingent tri-layer control method for robust Customer-to-Manufacturer operations under demand uncertainty and equipment failures" has been accepted for publication in Computers & Industrial Engineering.

Comments from the Editor and Reviewers can be found below.

Your accepted manuscript will now be transferred to our production department and work will begin on creation of the proof. If we need any additional information to create the proof, we will let you know. If not, you will be contacted again in the next few days with a request to approve the proof and to complete a number of online forms that are required for publication.

Thank you for submitting your work to this journal.

We encourage authors of original research papers to share the research objects - including raw data, methods, protocols, software, hardware and other outputs - associated with their paper. More information on how our open access Research Elements journals can help you do this is available at https://www.elsevier.com/authors/tools-and-resources/research-elements-journals?dgcid=ec_em_research_elements_email.

We appreciate and value your contribution to Computers & Industrial Engineering.

We regularly invite authors of recently published manuscript to participate in the peer review process. If you were not already part of the journal's reviewer pool, you have now been added to it. We look forward to your continued participation in our journal, and we hope you will consider us again for future submissions.

With kind regards,
Yasser Dessouky, Ph.D.
Receiving Ed/Office
Computers & Industrial Engineering

Comments from the Editors and Reviewers:
Reviewer #1: I accept the paper
Reviewer #3: It is recommended to accept.
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Computers & Industrial Engineering

A disturbance-contingent tri-layer control method for robust Customer-to-Manufacturer operations under demand uncertainty and equipment failures

--Manuscript Draft--

Manuscript Number:	CAIE-D-25-07307R2
Article Type:	Research Paper
Keywords:	Customer-to-Manufacturer systems; Disturbance-contingent control; Tri-layer operational robustness; Equipment failures; Imperfect feedback.
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	Kwok-Kun Kwong
	Taiwen Feng
Abstract:	Customer-to-Manufacturer (C2M) systems improve customization but are vulnerable to fragmented small-batch demand, frequent order insertion, equipment failures, and imperfect feedback. This study proposes a disturbance-contingent tri-layer control method for robust C2M operations. The method models C2M operations as a coupled software-physical-data system, captures Poisson, Markov-Jump, and GARCH-Poisson demand disturbances, and incorporates equipment failures, cascading effects, repair persistence, and imperfect feedback. It identifies disturbance modes online, activates mode-dependent parameters from an offline constrained library, projects raw control actions into feasible domains, and applies Lyapunov-based correction. A case-based simulation calibrated by enterprise-style operational records evaluates feasibility, online switching, benchmark performance, sensitivity, imperfect-feedback robustness, stability–cost trade-offs, ablation effects, and scalability. Compared with no additional robust control, the method reduces fluctuation amplitude by approximately 49.0% under Markov-Jump demand with failures and 53.8% under GARCH-Poisson demand with failures. Total cost decreases by approximately 60.8% and 60.4% under these two compound disturbances, while implemented physical constraint violations are reduced to zero after feasible-domain projection. The results also show that volatility-clustering disturbances are harder to identify online, feedback delay is more damaging than packet loss or measurement noise, and excessive control intensity produces diminishing returns.

A disturbance-contingent tri-layer control method for robust Customer-to-Manufacturer operations under demand uncertainty and equipment failures

Abstract Customer-to-Manufacturer (C2M) systems improve customization but are vulnerable to fragmented small-batch demand, frequent order insertion, equipment failures, and imperfect feedback. This study proposes a disturbance-contingent tri-layer control method for robust C2M operations. The method models C2M operations as a coupled software-physical-data system, captures Poisson, Markov-Jump, and GARCH-Poisson demand disturbances, and incorporates equipment failures, cascading effects, repair persistence, and imperfect feedback. It identifies disturbance modes online, activates mode-dependent parameters from an offline constrained library, projects raw control actions into feasible domains, and applies Lyapunov-based correction. A case-based simulation calibrated by enterprise-style operational records evaluates feasibility, online switching, benchmark performance, sensitivity, imperfect-feedback robustness, stability–cost trade-offs, ablation effects, and scalability. Compared with no additional robust control, the method reduces fluctuation amplitude by approximately 49.0% under Markov-Jump demand with failures and 53.8% under GARCH-Poisson demand with failures. Total cost decreases by approximately 60.8% and 60.4% under these two compound disturbances, while implemented physical constraint violations are reduced to zero after feasible-domain projection. The results also show that volatility-clustering disturbances are harder to identify online, feedback delay is more damaging than packet loss or measurement noise, and excessive control intensity produces diminishing returns.

Keywords Customer-to-Manufacturer systems; Disturbance-contingent control; Tri-layer operational robustness; Equipment failures; Imperfect feedback.