

# I-Lin Wang

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## EDUCATION

2003 Ph.D. in Industrial Engineering, ISyE, GA Tech, U.S.A.  
1996 M.S. in Operations Research, OR Center, M.I.T., U.S.A.  
1991 B.S. in Aeronautical & Astronautical Engineering, NCKU, Taiwan

## EMPLOYMENT

2014.8 - Professor, Department of Industrial & Information Management, NCKU, Taiwan  
2007.8- 2014.7 Associate Professor, Department of Industrial & Information Management, NCKU, Taiwan  
2003.8- 2007.7 Assistant Professor, Department of Industrial & Information Management, NCKU, Taiwan  
1996.4- 1997.3 Foreign Researcher, Fujitsu Research Lab. L.T.D., Kawasaki, Japan

## RESEARCH INTERESTS

Network Optimization, Integer Programming, Algorithm Design, Scheduling, Logistics, Shared Mobility

## PUBLICATIONS

### A. Journal Papers

- 20 papers published in 2005-2021 in the following journals and topics:  
*Applied Mathematics and Computation* (2011): bioinformatics, haplotype inference  
*Asia-Pacific Journal of Operational Research* (2008): new shortest path algorithm  
*Computers & Industrial Engineering* (2011): asset management optimization, pavement project  
*Flexible Services and Manufacturing* (2013): semiconductor manufacturing, scheduling  
*IEEE Transactions on Electronics Packaging Manufacturing* (2006): reverse logistics, network design  
*International Journal of Integrated Supply Management* (2008): motorcycle courier system, city logistics  
*International Journal of Operations Research* (2018, 2018, 2020): multicommodity network flow; UAV routing  
*International Journal of Reliability and Quality Performance* (2009): manufacturing network optimization  
*Journal of Industrial and Management Optimization* (2006, 2009, 2016): manufacturing network optimization  
*Journal of Intelligent Manufacturing* (2012): semiconductor manufacturing, scheduling  
*Mathematical Biosciences* (2011): bioinformatics, haplotype inference  
*Numerical Algebra, Control, and Optimization* (2021): shared mobility, bicycle sharing, repositioning  
*Operations Research* (2013): shared mobility, bicycle sharing, repositioning  
*Pacific Journal of Optimization* (2014): manufacturing network optimization  
*Transportation Research Part C* (2016): electric vehicle logistics system  
*Transportation Science* (2005): new shortest path algorithms

### B. Conference Papers

- 32 International Conference papers outside T.W. (APIEMS, APMC, C.I.E., INFORMS, MLOG, TLOG)
- 33 International Conference papers inside T.W. (APIEMS, Automation, EAWIE, ICLS, ICTPA, I.P.O.)
- 55 Domestic Conference papers inside T.W. (CIIE, C.I.T., ORSTW)

## HONORS AND AWARDS

### A. Personal Awards (19 times)

- 7 awards in INFORMS Railway Application Section Problem Solving Competition:  
1<sup>st</sup> Place (2017); 2<sup>nd</sup> Place (2014, 2016, 2019); 3<sup>rd</sup> Place (2011); Honorable Mentions (2010, 2013)
- Young Researcher Award in Management, 2012, by the Kaohsiung Chapter of the Chinese Management Association
- Best Paper Award (3<sup>rd</sup> place) in CIT2012 Annual Conference, 2012, by the Chinese Institute of Transportation
- Young Researcher Project Receiver, 2013, by National Science Council
- Lu Feng-Chang Medal in Management, 2013, by the Chinese Management Association
- Young Researcher Innovated Research Competition, 2013, the honorable mentions (top 3 in Social Science), by the Taiwan Comprehensive University System
- Problem-solving competition finalist (10<sup>th</sup> place in Smart Inventory), 2018, by JD.com
- 4 Best Research Project Poster Awards by National Science Council (NSC/MOST) in 2009, 2016, 2018, 2022
- Best Teaching Award (2021), On-line Teaching Award (2022) by NCKU

## **B. Thesis or Paper Awards with Students (70 times)**

- 28 Thesis or Paper Awards by the Chinese Industrial Engineering Society
- 19 Thesis or Paper Awards by the Operations Research Society of Taiwan
- 23 Thesis or Paper Awards by other organizations

## **PROJECT GRANTS**

### **A. Grants by the National Science Council (NSC/MOST) of Taiwan & NCKU**

- 2003-04: NTD 362,800, Multiple Pairs Shortest Paths Algorithms, NSC 92-2213-E-006-094
- 2004-05: NTD 509,900, New column generation and partitioning methods for multicommodity network flow problems, NSC 93-2213-E-006-096
- 2005-06: NTD 150,000, New nonnegative least squares primal-dual methods for network optimization problems
- 2006-07: NTD 651,000, On solving the minimum distribution cost flow and maximum distribution flow problems, NSC 95-2221-E-006-268
- 2007-08: NTD 590,000, Haplotyping population by optimization theorems and algorithms (I), NSC 96-2221-E-006-015
- 2008-09: NTD 585,000, Haplotyping population by optimization theorems and algorithms (II), NSC 97-2221-E-006-173
- 2009-11: NTD 1,279,000, A Study on Reliability for Distribution Networks with Multi-state Capacitated Arcs, NSC 98-2410-H-006-115-MY2
- 2011-13: NTD 984,000, A Study on the Network Design and Bike Repositioning for Urban Bike Sharing Systems, NSC 100-2410-H-006-006-MY2
- 2013-16: NTD 2,124,000, Design and Repositioning Strategies for the Public Bike and E-scooter Sharing, NSC 102-2221-E-006-141-MY3
- 2016-19: NTD 2,326,000, On scheduling multi-mode restoration tasks for networks of broken nodes or arcs in humanitarian logistics, MOST 105-2221-E-006-182-MY3
- 2019-20: NTD 807,000, Optimal Coordinated Deployment and Route Planning for Searching and Patrolling by Multiple Unmanned Vehicles (I), MOST 108-2221-E-006-058
- 2020-21: NTD 883,000, Optimal Coordinated Deployment and Route Planning for Searching and Patrolling by Multiple Unmanned Vehicles (II), MOST 109-2221-E-006-150
- 2021-24: NTD 1,812,000, Optimal Coordinated Drone Path Planning for Searching and Light Show Purposes

### **B. Grants by Other Organizations**

- 2008: NTD 500,000, Flexible Scheduling Algorithms for Semiconductor Manufacturing, by TSMC
- 2012: NTD 500,000, Strategic Design of Bicycle Sharing Systems in Tainan City, by Tainan City Government
- 2013: JPD 840,000, Strategic Design and Tactical Management for Metropolitan Public Bike Sharing Systems by Sumitomo Foundation (2012 GRANT FOR JAPAN-RELATED RESEARCH PROJECTS)
- 2015: NTD 500,000, Chicken Slaughterhouse Demand Forecasting and Inventory Planning, by DaChan Co.
- 2016: NTD 310,000, Evaluation of the Introduction of Industry 4.0 to the Textile Industry, by Everest Textile
- 2016: NTD 200,000, Design of Mathematical Optimization Models for Demand Response, by ITRI
- 2017-19: NTD 1,200,000, Strategic Design of E-car Sharing Systems, by Kaison Green Energy Technology Co.
- 2019-20: NTD 2,500,000, Optimal W.I.P. Allocation and Scheduling for Smart Manufacturing, by Innolux Co.
- 2020-21: NTD 1,000,000, Smart Energy Storage System Management, by Far Eas Ton Co.

## **COURSES TAUGHT**

### **Undergraduate courses**

- Data Structure, Discrete Mathematics, Computer Programming and Application

### **Graduate courses**

- Supply Chain Management, Network Optimization, Optimization Models and Applications

## **PROFESSIONAL SERVICES**

**Area Editor** *Computers and Industrial Engineering*, 2013 - now

**Associate Editor** *Journal of Industrial and Production Engineering*, 2011 - 2022

**Associate Editor** *International Journal of Operations Research*, 2012 – now

**Board Director** *Operations Research Society of Taiwan*, 2012 – now

**Board Director** *Chinese Institute of Industrial Engineering*, 2023 - now

## **PROFESSIONAL AFFILIATIONS**

*INFORMS* (Institute for Operations Research and the Management Sciences)

*CIIE* (Chinese Institute of Industrial Engineering); *ORSTW* (Operations Research Society of Taiwan)

*C.I.T.* (Chinese Institute of Transportation); *C.M.A.* (Chinese Management Association)

**SUPERVISED MASTER THESE in 2015-2022 (\* receiving paper/thesis award; 20/26 are awarded)**

1. On the optimal UAV flight path planning for maximum min data transmission (2022\*)
2. A Picking Path Planning in High Density Puzzle-Based Storage Systems(2022\*)
3. On the Maximum Sensing Data Collection Cyclic Path Routing Problem by Multiple UAVs (2022\*)
4. A study on the optimal drone fleet flight path planning for drone light show with safety spacing consideration (2021\*)
5. A Study on the Multi-robot Collaborative Path Planning for Carrying Movable Racks in an Autonomous Picking (2021\*)
6. A Study of the Maximum Sensing Data Collection Routing Problem by Multiple UAVs with Sensing the Idleness and Latency Constraints (2021\*)
7. A Study of the Carrier Vehicle Traveling Salesman Problem Considering Target Composition with Single or Two UAVs (2021\*)
8. Crowdsourced Repositioning and Recharging Strategies for Shared Micromobility Services by Free Floating E-scooter Sharing Systems (2020\*)
9. Optimal Human-UAV Collaborative Search Path Planning for an Immobile Target with Edge Detection Probabilities (2020\*)
10. A Multi-Agent Path Finding Problem with Rack Selection in a Warehouse of Movable Racks (2020\*)
11. Optimal Collaborative Path Planning for Area Coverage Tasks by a Parent Boat Carrying Unmanned Surface Vehicles (2020)
12. A first and last mile crowdshipping problem by smart lockers in city logistics (2019\*)
13. An Optimal Joint UAV and Ground Vehicle Path Planning Problem for Area Coverage with Energy Consideration (2019)
14. Strategic Design of Hub-and-Spoke City Logistics Network using Autonomous Vehicle for the First and Last Mile Delivery (2019)
15. Optimal Task Planning for Dynamic Repositioning and Crowdsourced Shipping in a Free-floating Electric Motorcycle Sharing System (2019\*)
16. An Optimal Collaborative Search Path Planning Problem for an Immobile Target using a Fleet of Unmanned Aerial Vehicles (2019\*)
17. On the K Windy Rural Postmen Problem with a Patrol Routing Application by Multiple Unmanned Autonomous Vehicles (2019\*)
18. A Study of the Dynamic Repositioning Strategies for a Free Floating Electric Motorcycle Sharing System (2019)
19. A node restoration scheduling problem considering time-dependent demands on nodes or origin-destination pairs (2018\*)
20. Optimal multi-type arc restoration scheduling considering blocked traffic for pipeline networks in post-disaster management (2017\*)
21. Optimal security deployment and patrol scheduling in rail transit networks (2017\*)
22. The Design of Mathematical Models and Data Visualization Tools for Public Bike Sharing Systems with Crowdsourced Repositioning Strategy (2016\*)
23. An arc restoration scheduling problem for pipeline networks in post-disaster management (2016)
24. Mathematical models of optimal ambulance redeployment for shipping mass casualties in the emergency medical services system (2016)
25. Site Clustering and Bike Repositioning Strategies for Public Bike Sharing Systems based on Demand Profile and Temporary Bike Buffer Zone (2015\*)
26. A multi-mode network restoration problem in post-disaster humanitarian logistics management (2015\*)