

Chuanbo Hua

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EDUCATION EXPERIENCE

Korea Advanced Institute of Science and Technology (KAIST)

Ph.D. in Industrial and Systems Engineering

- KAIST SILab. Advisor: Prof. Jinkyoo Park
- KAIST full scholarship & KAIST presidential scholarship

Daejeon, South Korea
Sep. 2022 ~ Aug. 2025

Korea Advanced Institute of Science and Technology (KAIST)

M.E. in Industrial and Systems Engineering

- KAIST SILab. Advisor: Prof. Jinkyoo Park
- KAIST full scholarship. GPA: 3.9/4.3

Daejeon, South Korea
Sep. 2020 ~ Aug. 2022

Harbin Institute of Technology (HIT)

B.S. in Information and Computing Science, Mathematics

- Advisor: Prof. Bailing Wang. GPA: 3.4/4.0 (12/98)

Weihai, China
Sep. 2016 ~ Jul. 2020

RESEARCH EXPERIENCE

Korea Advanced Institute of Science and Technology (KAIST)

Postdoctoral Fellow

- InnoCore PRISM-AI Project

Daejeon, South Korea
Sep. 2025 ~ Present

Pohang University of Science and Technology (POSTECH)

Exchange Student in Computer Science

- POSTECH CVLab. Advisor: Prof. Minsu Cho

Pohang, South Korea
Sep. 2019 ~ Jan. 2020

WORK EXPERIENCE

Omelet

AI Scientist Intern

- RL foundation model for combinatorial optimization

Daejeon, Republic of Korea
Jun. 2024 ~ Jun. 2025

Daewoong Foundation

Machine Learning Engineering Intern

- ML application on time-series medical anomaly detection

Seoul, Republic of Korea
Jan. 2023 ~ Feb. 2023

Huawei

Algorithm Engineering Intern

- Device hardware-to-software simulator developing

Nanjing, China
Jun. 2019 ~ Aug. 2019

China Huarong Asset Management

Data Engineering Intern

- Database management and statistic algorithm developing

Beijing, China
Jun. 2018 ~ Sep. 2018

OPEN-SOURCE EXPERIENCE

AI4CO

Co-founder

github.com/ai4co

Feb. 2023 ~ Present

- Open research community in Artificial Intelligence for CO
- 250+ followers, 20+ projects, 10+ top AI conference papers

RL4CO

Main Contributor

github.com/rl4co

May. 2023 ~ Present

- A PyTorch library for all things Reinforcement Learning for CO
- 700+ stars. Recommended by PyTorch-TorchRL official.

TorchRL

Contributor

github.com/pytorch/rl

June. 2024 ~ Present

- Official PyTorch library for Reinforcement Learning

DiffEqML

Member

github.com/DiffEqML

Mar. 2022 ~ Present

- Open research community in AI for dynamical systems
- 200+ followers, 2000+ stars

PUBLICATIONS

Ph.D. Dissertation

- [1] *"Learning Relational Representation and Communication Policies for Multi-Agent Systems"*, 2021. Ph.D. Dissertation Committee: Prof. Jinkyoo Park, Prof. Tasik Lee, Prof. Il-Chul Moon, Prof. Changhyun Kwon, and Prof. Jiachen Li

Under Review & Preprint

- [7] **C. Hua**, F. Berto, A. Hottung, N. G. Zepeda, Y. Ma, P. Wong-Chung, C. Kwon, C. Wu, K. Tierney, and J. Park, *"HADES: Hierarchical Aggregation Deconstruction Search for Vehicle Routing Problems"*, under review.
- [6] Z. Zhao*, **C. Hua***, F. Berto, Z. Ma, K. Lee, J. Li, and J. Park, *"EvoNav: Evolutionary Reward Function Design for Robot Navigation with Large Language Models"*, under review.
- [5] A. Hottung*, F. Berto*, **C. Hua**, N. G. Zepeda, D. Wetzels, M. Romer, H. Ye, D. Zago, M. Poli, S. Massaroli, and J. Park, *"VRPAgent: LLM-Driven Discovery of Heuristic Operators for Vehicle Routing Problems"*, arXiv preprint.
- [4] Z. Ma*, Z. Zhao*, **C. Hua***, F. Berto, and J. Park, *"JudgeFlow: Agentic Workflow Optimization via Operator Judge"*, under review.
- [3] J. Son, Z. Zhao, F. Berto, **C. Hua**, C. Kwon, and J. Park, *"RRNCO: Neural Combinatorial Optimization for Real-World Routing"*, arXiv preprint.
- [2] J. Li*, **C. Hua***, H. Ma, J. Park, V. Dax, and M. J. Kochenderfer, *"Multi-Agent Dynamic Relational Reasoning for Social Robot Navigation"*, submitted to IEEE Transactions on Robotics (T-RO), under revision.
- [1] J. Li*, **C. Hua***, J. Park, H. Ma, V. Dax, and M. J. Kochenderfer, *"EvolveHypergraph: Group-Aware Dynamic Relational Reasoning for Trajectory Prediction"*, arXiv preprint.

Conference Proceedings

- [10] **C. Hua***, F. Berto*, Z. Zhao, J. Son, C. Kwon, and J. Park, *"USPR: A Unified Learning Model for the Profiled Vehicle Routing Problem"*, AAAI 2026 (Poster).
- [9] Z. Zhao*, **C. Hua***, F. Berto*, K. Lee, Z. Ma, J. Li, and J. Park, *"TrajEvo: Designing Trajectory Prediction Heuristics via LLM-Driven Evolution"*, AAAI 2026 (Poster).

- [8] F. Berto*, **C. Hua***, L. Lautmann, J. Son, J. Park, K. Ahn, C. Kwon, L. Xie, and J. Park, "*PARCO: Learning Parallel Autoregressive Policies for Efficient Multi-Agent Combinatorial Optimization*", NeurIPS 2025 (Poster).
- [7] F. Berto*, **C. Hua***, J. Park*, L. Luttmann*, Y. Ma, F. Bu, J. Wang, H. Ye, M. Kim, S. Choi, N. Gast Zepeda, A. Hottung, J. Zhou, J. Bi, Y. Hu, F. Liu, H. Kim, J. Son, H. Kim, D. Angioni, W. Kool, Z. Cao, Q. Zhang, J. Kim, J. Zhang, K. Shin, C. Wu, S. Ahn, G. Song, C. Kwon, K. Tierney, L. Xie, and J. Park, "*RL4CO: An Extensive Reinforcement Learning for Combinatorial Optimization Benchmark*", KDD 2025 (Oral).
- [6] **C. Hua***, F. Berto*, J. Son, S. Kang, C. Kwon, and J. Park, "*CAMP: Collaborative Attention Model with Profiles for Vehicle Routing Problems*", AAMAS 2025 (Oral).
- [5] Y. Chen, M. Son, **C. Hua**, and J. Y. Kim, "*AoP-SAM: Automation of Prompts for Efficient Segmentation*", AAAI 2025 (Poster).
- [4] H. Kim, F. Berto, J. Lee, H. An, T. Shin, **C. Hua**, J. Park, Y. Kim, and J. Kim, "*Accelerating Chiplet Placement & Routing Optimization with Machine Learning*", DesignCon 2025 (Best Paper).
- [3] H. Ye, J. Wang, Z. Cao, F. Berto, **C. Hua**, H. Kim, and J. Park, "*Large Language Models as Hyper-Heuristics for Combinatorial Optimization*", NeurIPS 2024 (Poster).
- [2] H. Tang*, F. Berto*, Z. Ma, **C. Hua**, K. Ahn, and J. Park, "*HiMAP: Learning Heuristics-Informed Policies for Large-Scale Multi-Agent Pathfinding*", AAMAS 2024 (Poster).
- [1] **C. Hua***, F. Berto*, M. Poli, S. Massaroli, and J. Park, "*Learning Efficient Surrogate Dynamic Models with Graph Spline Networks*", NeurIPS 2023 (Poster).

Journal Articles

- [4] F. Berto*, **C. Hua***, N. G. Zepeda*, A. Hottung, N. Wouda, L. Lan, K. Tierney, and J. Park, "*RouteFinder: Towards Foundation Models for Vehicle Routing Problems*", TMLR 2025.
- [3] J. Kim, **C. Hua**, S. Lee, S. Kim, J. H. Kim, and M. H. Park, "*Deep Learning-Based Coagulant Dosage Prediction for Extreme Events Leveraging Large-Scale Data*", JWPE 2025 (IF: 6.7).
- [2] S. Lee, J. Kim, **C. Hua**, S. Kim, and M. H. Park, "*Comparing Artificial and Deep Neural Network Models for Prediction of Coagulant Amount and Settled Water Turbidity: Lessons Learned from Big Data in Water Treatment Operations*", JWPE 2024 (IF: 6.7).
- [1] S. Lee, J. Kim, **C. Hua**, M. H. Park, and S. Kim, "*Coagulant Dosage Determination Using Deep Learning-Based Graph Attention Multivariate Time Series Forecasting Model*", Water Research 2023 (IF: 12.4).

Workshop Publications

- [7] S. Lin and **C. Hua[†]**, "*PILLM: Physics-Informed Large Language Models for HVAC Anomaly Detection with Autonomous Rule Generation*", NeurIPS 2025 Workshop (Oral).
- [6] J. Son, Z. Zhao, F. Berto, **C. Hua**, C. Kwon, and J. Park, "*RRNCO: Neural Combinatorial Optimization for Real-World Routing*", NeurIPS 2025 Workshop (Poster).
- [5] S. Lin and **C. Hua[†]**, "*BuildEvo: Designing Building Energy Consumption Forecasting Heuristics via LLM-Driven Evolution*", ICML 2025 Workshop (Poster).
- [4] Z. Zhao*, **C. Hua***, F. Berto*, K. Lee, Z. Ma, J. Li, and J. Park, "*TrajEvo: Designing Trajectory Prediction Heuristics via LLM-Driven Evolution*", ICML 2025 Workshop (Poster).
- [3] F. Berto*, **C. Hua***, N. G. Zepeda, A. Hottung, N. Wouda, L. Lan, K. Tierney, and J. Park, "*RouteFinder: Towards Foundation Models for Vehicle Routing Problems*", ICML 2024 Workshop (Oral).
- [2] F. Berto*, **C. Hua***, J. Park*, M. Kim, H. Kim, J. Son, H. Kim, J. Kim, and J. Park, "*RL4CO: A Unified Reinforcement Learning for Combinatorial Optimization Library*", NeurIPS 2023 Workshop (Oral).

- [1] **C. Hua***, F. Berto*, M. Poli, S. Massaroli, and J. Park, "*Efficient Continuous Spatio-Temporal Simulation with Graph Spline Networks*", ICML 2022 Workshop (Oral).

* Equal contribution. † Corresponding author.

INVITED TALKS

- "*Physical-Informed Large Language Models: Opportunities and Challenges*" 2025
 - NeurIPS 2025 Workshop
 - Department Seminar at National University of Singapore
- "*An Extensive Reinforcement Learning for Combinatorial Optimization Benchmark*" 2025
 - Learning-assisted Evolutionary Algorithm Design Workshop (LEAD)
 - Triennial Symposium on Transportation Analysis (TRISTAN)
- "*Beyond Transformer: Is the Mamba Real Next Generation?*", Department Seminar 2024
- "*Learning Efficient Surrogate Dynamic Models with GraphSplineNets*" 2023
 - Daewoong Foundation Research Seminar
 - Department Seminar at KAIST
 - ICML 2022 Workshop

ACADEMIC SERVICE

- ICML Reviewer 2023 ~ Present
- ICLR Reviewer 2024 ~ Present
- NeurIPS Reviewer 2023 ~ Present
- KDD Reviewer 2024 ~ Present
- AAAI Reviewer 2024 ~ Present
- CoRL Reviewer 2025
- AAMAS Reviewer 2025
- IJCAI Reviewer 2025
- RLC Reviewer 2025
- RA-L Reviewer 2024

HONORS & AWARDS

- DesignCon Best Paper Award Finalist 2024
- Daewoong AI & Big Data Scholarship 2024, 2023, 2022
- KAIST ISysE Research Day Excellent Paper Award 2023
- KAIST Special Scholarship 2022
- 2nd Finalist, Daewoong Foundation AI & Big Data Hackathon 2021
- Second Round Shortlisted, The 5th Baidu Big Data Competition 2019
- Provincial Second Award, CUMCM 2018
- People's Scholarship 2018, 2017

ADDITIONAL

- Photographer: portfolio website at cbhua.github.io/other
- Language: Chinese (Native), English (IELTS 7.5)