

# Mingde "Harry" Zhao



## BASICS

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Home Page: [mingde.world](http://mingde.world) Languages: English (native), Mandarin (母语), French (intermédiaire)

## RESEARCH INTERESTS

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Reasoning, Planning, Consciousness, Reinforcement Learning, Meta-Learning

## EDUCATION

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<b>Doctor of Philosophy, Computer Science</b> Mila (L'institut québécois d'intelligence artificielle) / McGill University Advisors: Doina Precup (DeepMind, McGill, Mila) & Yoshua Bengio (UdeM, Mila)	2020 – Now
<b>Master of Science, Computer Science</b> Mila / McGill, CGPA: 4.0/4.0; Advisors: Doina Precup & Xiaowen Chang (McGill)	2018 – 2020
<b>Bachelor of Engineering, Computer Science &amp; Technology</b> Dalian University of Technology, GPA: 90.0%+; Advisor: Hongwei Ge	2014 - 2018

## PAPERS (CONFERENCE)

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- "A Consciousness-Inspired Planning Agent for Model-Based Reinforcement Learning" - **M.Z.\***, Z. Liu\*, S. Luan\*, S. Zhang\*, D. Precup, Y. Bengio @ NeurIPS 2021.
- "META-Learning State-Based Eligibility Traces for More Sample-Efficient Policy Evaluation" - **M.Z.\***, S. Luan\*, I. Porada\*, X.W. Chang & D. Precup @ AAMAS 2020.
- "Break the Ceiling: Stronger Multi-Scale Deep Graph Convolutional Networks" - S. Luan\*, **M.Z.\***, X.W. Chang & D. Precup @ NeurIPS 2019.
- "Exploring Overall Contextual Information for Image Captioning in Human-Like Cognitive Style" - H. Ge, Z. Yan, K. Zhang, **M.Z.** & L. Sun @ ICCV 2019.
- "Two-stage Automatic Image Annotation Based on Latent Semantic Scene Classification" - H. Ge, K. Zhang, Y. Hou, C. Yu, **M.Z.**, Z. Wang & L. Sun @ IJCNN 2020.
- "Strategy Selection in Complex Game Environments based on Transfer Reinforcement Learning" - H. Ge, **M.Z.**, K. Zhang & L. Sun @ IJCNN 2019.
- "Multi-Grained Cascade AdaBoost Extreme Learning Machine for Feature Representation" - H. Ge, W. Sun, **M.Z.**, K. Zhang, L. Sun & C. Yu @ IJCNN 2019.
- "A Selective Ensemble Learning Framework for ECG-Based Heartbeat Classification with Imbalanced Data" - H. Ge, K. Sun, L. Sun, **M.Z.** & C. Wu @ BIBM 2018.
- "A Many Objective Evolutionary Algorithm with Fast Clustering & Reference Point Redistribution" - **M.Z.**, H. Ge, H. Han & L. Sun @ CEC 2018.

## PAPERS (JOURNAL)

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\* Equal Contributions

- *"Bi-space Interactive Cooperative Coevolution for Large Scale Blackbox Optimization"* – H. Ge, **M.Z.**, Y. Hou, K. Zhang, L. Sun, G. Tan, Q. Zhang, C.L.P. Chen @ *Applied Soft Computing*, 2020.
- *"A Two-Engine Interaction Driven Many-Objective Evolutionary Algorithm with Feasibility-Aware Adaptation"* – H. Ge, **M.Z.**, K. Zhang & Y. Hou @ *Applied Soft Computing*, 2019.
- *"Stacked Denoising Extreme Learning Machine Autoencoder based on Graph Embedding for Feature Representation"* – H. Ge, W. Sun, **M.Z.** & Y. Yao @ *IEEE Access*, 2019.
- *"An Interactive Many Objective Evolutionary Algorithm with Cascade Clustering & Reference Point Incremental Learning"* – H. Ge\*, **M.Z.\***, L. Sun, Z. Wang, G. Tan, Q. Zhang & C.L.P. Chen @ *IEEE Transactions on Evolutionary Computation*, 2018.

## **PAPERS (NON-ARCHIVAL) & SOFTWARE TOOLS**

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- *"Is Heterophily A Real Nightmare For Graph Neural Networks To Do Node Classification?"* – S. Luan, C. Hua, Q. Lu, J. Zhu, **M.Z.**, S. Zhang, X.W. Chang, D. Precup @ submitted to ICLR 2022.
- *"Exploration-Driven Representation Learning in Reinforcement Learning"* – A. Erraqabi, **M.Z.**, M. C. Machado, Y. Bengio, S. Sukhbaatar, L. Denoyer & A. Lazaric @ *ICML 2021 URL Workshop*, submitted to ICLR 2022.
- *"Training Matters: Unlocking Potentials of Deeper Graph Convolutional Neural Networks"* – S. Luan\*, **M.Z.\***, X.W. Chang & D. Precup @ arXiv, 2020.
- *"Complete the Missing Half: Augmenting Aggregation with Diversification for Graph Convolutional Networks"* – S. Luan\*, **M.Z.\***, C. Hua\*, X.W. Chang & D. Precup @ arXiv, 2020.
- *"Generalizable Meta-Heuristic based on Temporal Estimation of Rewards for Large Scale Blackbox Optimization"* – **M.Z.\***, H. Ge\*, Y. Lian & K. Zhang @ arXiv, 2018.
- *"SOOPLAT: An Experimental Platform for Single Objective Optimization"* – **M.Z.** @ *GitHub*, 2018.

## **PATENTS**

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- *"Fast Dichotomic CNN for Traffic Sign Identification"* – H. Ge, **M.Z.**, X. Yang @ *SIPO*, 2018
- *"Peach Segmentation with Deep Reinforcement Learning"* – H. Ge, **M.Z.**, J. Lin, L. Sun @ *SIPO*, 2018.

## **BEYOND RESEARCH**

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Research Scientist Internship (Neural Rendering) @ Haiper LTD	2021-Present
McGill University, Teaching Assistant (COMP350, COMP424, COMP417)	2019 - 2021
CIFAR Deep Learning & Reinforcement Learning Summer School	2019, 2020
Neusoft Dalian, Research Engineer Intern	2016, 2017

## **HONORS & AWARDS**

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### **Ph.D.:**

FRQNT Ph.D. Fellowship (*1<sup>st</sup>-place of 2021 applicants*)

### **Master:**

DeepMind Graduate Award (2019).

Graduate Mobility Award (2019).

### **Undergraduate:**

Academic Excellence Awards (2015 - 2018).

Outstanding Bachelor Thesis (2018).

Outstanding Student Researcher of the Year (2018).

