# Mingde "Harry" Zhao

*Better humanity via the meaningful studies of artificial intelligence!*

## *BASICS*


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*Home Page*: mingde.world *Languages*: English (native), Mandarin (母语), French (intermédiaire)


## *RESEARCH INTERESTS*

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

## *EDUCATION*

**Doctor of Philosophy, Computer Science** 2020 – Now
Mila (L'institut québécois d'intelligence artificielle) / McGill University
Advisors: Doina Precup (DeepMind, McGill, Mila) & Yoshua Bengio (UdeM, Mila)

**Master of Science, Computer Science** 2018 – 2020
Mila / McGill, CGPA: 4.0/4.0; Advisors: Doina Precup & Xiaowen Chang (McGill)

**Bachelor of Engineering, Computer Science & Technology** 2014 - 2018
Dalian University of Technology, GPA: 90.0%+; Advisor: Hongwei Ge

## *PAPERS (CONFERENCE)*

- "*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)*

* 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*

- "*A Consciousness-Inspired Planning Agent for Model-Based Reinforcement Learning*" - **M.Z.***, Z. Liu*, S. Luan*, S. Zhang*, D. Precup, Y. Bengio @ NeurIPS 2021, under review.
- "*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 @ NeurIPS 2021, under review.
- "*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.
- "*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*

- "*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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| 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*

**Ph.D.:**
FRQNT Ph.D. Fellowship (*ranked 1st among all applicants, 2021*) Québec
**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).