Wang Bin

Research Scientist at Huawei 2012 Labs

Beijing, China | Bin Wang | Google Scholar | binderwang@163.com

Research Interests

My research focuses on building intelligent systems that can understand, reason, and interact with the world. Specific interests include **Foundation Models** (LLMs, multimodal models, data synthesis, post-training, and reasoning), **AI Agents** (autonomous agents powered by LLMs that can plan, use tools, and execute complex tasks), **Reinforcement Learning** (policy optimization, reward modeling, RLVR & RLHF, and offline RL), and **Embodied AI** (robotic manipulation, vision-language grounding, and sensorimotor learning).

Experience

Research Scientist 2018 – Present
Huawei 2012 Labs *Beijing, China*

- **Foundation Models** (2023–Present): Leading LLM/VLM post-training with focus on ARC abilities. Research on improving complex reasoning via synthetic data and dual-system approaches (*LogicTree, Pangu Embedded, Pangu Ultra*) and LLM function calling (*ToolACE*).
- **Embodied AI** (2022–2023): Vision-language pre-training for embodied agents (*EmbodiedGPT*), LLM-based task planning (*Tree-Planner*), diffusion model-driven robot manipulation, and offline meta-RL planning (*MetaDiffuser*).
- **Autonomous Driving** (2018–2022): RL for driving planning (lane-change, intersections). Imitation learning (Tripple-GAIL), meta-RL with decomposed mutual information (*DOMINO*), and sample-efficient behavior selection breaking Atari world records (*Learnable Behavior Control*).

Assistant Professor 2015 – 2018
University of Jinan *Shandong, China*

- Research on reinforcement learning for robotic navigation.

Education

Ph.D. in Control Science and Engineering 2010 – 2015
Institute of Automation, Chinese Academy of Sciences *Beijing, China*

- Research on reinforcement learning and autonomous driving.

B.S. in Automation 2006 – 2010
China University of Petroleum *Qingdao, China*

Selected Publications

[1] Zehao Wang, Lin Yang, Jie Wang, Kehan Wang, Hanzhu Chen, **Bin Wang**, Jianye Hao, Defu Lian, Bin Li, Enhong Chen. *LogicTree: Improving Complex Reasoning of LLMs via Instantiated Multi-step Synthetic Logical Data*. NeurIPS 2025 **(Spotlight)**.

[2] Weiwen Liu, Xu Huang, Xingshan Zeng, ..., **Bin Wang**, ..., Enhong Chen, et al. *ToolACE: Winning the Points of LLM Function Calling*. ICLR 2025.

[3] Yichun Yin, Wenyong Huang, Kaikai Song, ..., **Bin Wang**, ..., Zhicheng Liu, et al. *Pangu Ultra: Pushing the Limits of Dense Large Language Models on Ascend NPUs*. arXiv 2025.

[4] Hanting Chen, Yasheng Wang, Kai Han, ..., **Bin Wang**, ..., Yunhe Wang, et al. *Pangu Embedded: An Efficient Dual-system LLM Reasoner with Metacognition*. arXiv 2025.

[5] Mengkang Hu, Yao Mu, Xinmiao Yu, Mingyu Ding, Shiguang Wu, Wenqi Shao, Qiguang Chen, **Bin Wang**, Yu Qiao, Ping Luo. *Tree-Planner: Efficient Close-loop Task Planning with Large Language Models*. ICLR 2024.

[6] Fei Ni, Jianye Hao, Shiguang Wu, Longxin Kou, Jiashun Liu, Yan Zheng, **Bin Wang**, Yuzheng Zhuang. *Generate Subgoal Images before Act: Unlocking the Chain-of-Thought Reasoning in Diffusion Model for Robot Manipulation with Multimodal Prompts*. CVPR 2024.

[7] Yao Mu, Qinglong Zhang, Mengkang Hu, Wenhai Wang, Mingyu Ding, Jun Jin, **Bin Wang**, Jifeng Dai, Yu Qiao, Ping Luo. *EmbodiedGPT: Vision-Language Pre-Training via Embodied Chain of Thought*. NeurIPS 2023 **(Spotlight)**.

[8] Yao Lai, Jinxin Liu, Zhentao Tang, **Bin Wang**, Jianye Hao, Ping Luo. *ChiPFormer: Transferable Chip Placement via Offline Decision Transformer*. ICML 2023.

[9] Fei Ni, Jianye Hao, Yao Mu, Yifu Yuan, Yan Zheng, **Bin Wang**, Zhixuan Liang. *MetaDiffuser: Diffusion Model as Conditional Planner for Offline Meta-RL*. ICML 2023.

[10] Jiajun Fan, Yuzheng Zhuang, Yuecheng Liu, Jianye Hao, **Bin Wang**, Jiangcheng Zhu, Hao Wang, Shu-Tao Xia. *Learnable Behavior Control: Breaking Atari Human World Records via Sample-Efficient Behavior Selection.* ICLR 2023 **(Oral)**.

[11] Yao Mu, Fei Ni, Weichen Yu, **Bin Wang**, Jianye Hao, Ping Luo. *DOMINO: Decomposed Mutual Information Optimization for Generalized Context in Meta-Reinforcement Learning.* NeurIPS 2022 **(Spotlight)**.

Awards & Honors

Innovation Pioneer & 2012 Laboratories President Award	2025
2012 Laboratories President Award	2024
2012 Laboratories President Award	2023
Central Research Institute President Team Award & Outstanding Tutor	2021
Innovation Pioneer	2020

Professional Services

Conference Reviewer: NeurIPS, ICLR, ICML, etc.