Boyan(Bryan) Han

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EDUCATION

Hebei University of Technology, Tianjin, China — September 2020 — June 2024
Bachelor of Science in Artificial Intelligence

RESEARCH INTERESTS

Diffusion Large Language Models, Reinforcement Learning, dLLM/LLM Agent

RESEARCH EXPERIENCE

Logic-aware RL for dLLM generation order — Hangzhou, China
Project Lead — November 2025 — Now

- Investigating the degeneration of Diffusion LLMs into autoregressive behavior during complex reasoning; proposing a novel "tree-structured" generation hypothesis where the model preserves parallel capabilities for independent sub-tasks while respecting strict logical dependencies.
- Developing a logic-aware Reinforcement Learning framework that leverages explicit structural constraints (e.g., from Code Generation) to guide the diffusion denoising process; designing specific reward signals to encourage the discovery of a generation order that balances parallelism with logical validity.
- Constructed the data preprocessing pipeline to extract logical dependency graphs (via AST analysis) from code datasets, and finalized the mathematical formulation of the RL environment (specifically the reward shaping mechanism), with the core implementation currently underway.

Speculative decoding among LLMs and dLLMs — Hangzhou, China
Research Initiator & Lead — October 2025 — November 2025

- Independently conceptualized a hybrid speculative decoding framework to address the high inference latency of Reasoning LLMs, proposing to leverage the parallel generation capability of Diffusion LLMs as efficient drafters.
- Developed a proof-of-concept prototype featuring a block-wise verification mechanism, where the dLLM generates parallel reasoning blocks and the AR model validates the longest accepted prefix based on joint probability alignment, ensuring a balance between speed and quality.
- Validated the hypothesis of generation speed-up in preliminary experiments, but strategically concluded the project upon identifying the release of Nvidia's TiDAR (Think in Diffusion, Talk in Autoregression), which confirmed the high conceptual alignment and feasibility of the proposed direction.

Format-constrained generation method for dLLMs — Hangzhou, China
Independent Researcher — June 2025 — September 2025

- Developed a PyTorch-based training-free inference framework, implementing a dynamic anchor selection algorithm guided by token-level softmax scores, which significantly ensures the structural integrity of reasoning schemas in zero-shot settings.
- Conducted rigorous evaluations on mathematical reasoning benchmarks (GSM8K, MATH), benchmarking against Dream-7B and static infilling baselines. Demonstrated that the method significantly boosts structural adherence for reasoning tags while preserving reasoning accuracy, effectively balancing format constraints with content quality.
- Authored the full manuscript, designing high-quality visualizations to illustrate the algorithmic pipeline, and provided in-depth visual analysis on generative behavior in non-anchor regions and sample validity statistics.
- The project resulted in the following submission to ICLR 2026:
  B. Han, Y. Wang, Y. Cai, C. Zhang. 'Dynamic Infilling Anchors for Format-Constrained Generation in Diffusion LLMs.'

AWARDS

First prize in Electronics Design Contest 2022 among HeBei University of Technology — Tianjin, China
Developed the computer vision module for the vehicle, implementing robust algorithms for line tracking and counting based on OpenMV hardware and libraries.

Successful Participants of MCM & ICM 2022 — Tianjin, China
Collaborated with team members to formulate a novel definition of "Green GDP", constructed mathematical models to quantify the metric, and executed the data collection and calculation process.

PERFESSIONAL EXPERIENCES

NLP Lab, University of California at Merced Remote
Research Intern May 2025 — Now
Advisor: Prof. Yiwei Wang
AGI Lab, Westlake University Hangzhou, China
Research Assistant April 2025 — Now
Advisor: Prof. Chi Zhang
FAW-FINDREAMS New Energy Technology Co., Ltd. Changchun, China
Application Systems Engineer August 2024 — March 2025

SKILLS

- **Programming:** Python, C, Shell/Bash, Markdown
- **Framework or Ecosystem:** Pytorch, HuggingFace, WandB, Tree-sitter ...
- **Soft Skills:** Synergistic Collaborator, Intrinsically Motivated, Intellectually Curious