

JINGKUN AN

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🎓 EDUCATION

University of California, Davis, California

September 2026 – Present

Doctor of Philosophy, Major in Computer and Information Science.

Beihang University, Beijing

Aug. 2020 – Jun. 2024

Bachelor of Engineering, Major in Software Engineering, GPA 3.78/4.00.

🔧 TECHNICAL SKILLS

- **Programming Languages:** Python, Java, C
- **Artificial Intelligence:** Proficient in PyTorch and Scikit-Learn; familiar with Machine Learning and Deep Learning fundamentals, Diffusers, Transformers, Diffusion Model fine-tuning, and LLM Deployment.
- **Software Development:** Experienced with Django; familiar with Docker, MySQL, etc.

📖 FIRST AUTHOR PAPER

3D Trajectory Planning Model with Advanced Dataset and Benchmark Aug. 2025 – Nov. 2025

- **Publication:** “RoboTracer: Mastering Spatial Trace with Reasoning in Vision-Language Models for Robotics”, *ECCV 2026 (Accepted)*. [\[Project page\]](#).
- **Overview:** Proposed *RoboTracer*, the first 3D-aware VLM that achieves both 3D spatial referring and measuring as key perceptual cues for accurate spatial trace generation.
- **Dataset:** Constructed *TraceSpatial*, a large-scale dataset of **30 million** QA pairs, covering outdoor/indoor/tabletop scenarios, to enable the model to learn 3D spatial referring and measuring in the SFT stage, and further achieve spatial trajectory planning in the RFT stage.
- **Benchmark:** Built *TraceSpatial-Bench* which contains 100 real-world images with annotated tasks involving 3D object localization/movement/placement and is **the first benchmark** for 3D trajectory planning.
- **Performance:** Achieved SOTA results where *RoboTracer* gains **76.3%** success rate on spatial measuring (+14% vs *Gemini 2.5 Pro*) and outperforms *Gemini 2.5 Pro* by **36%** on 3D trajectory planning tasks.
- **Supervisor:** [Lu Sheng](#) (Prof. of Beihang University), [Shanghang Zhang](#) (Prof. of Peking University)

3D Spatial Reasoning Model with Advanced Dataset and Benchmark Dec. 2024 – May 2025

- **Publication:** “RoboRefer: Towards Spatial Referring with Reasoning in Vision-Language Models for Robotics”, *NeurIPS 2025 (Published)*. [\[Project page\]](#).
- **Overview:** Developed *RoboRefer*, a novel 3D-aware Vision-Language Model for multi-step spatial referring with explicit reasoning.
- **Dataset:** Defined **31 fine-grained spatial relations** to construct *RefSpatial*, the largest spatial understanding and referring dataset with over **20 million** QA pairs and human-like reasoning processes.
- **Benchmark:** Built *RefSpatial-Bench*, the first spatial referring benchmark with multi-step reasoning.
- **Performance:** Established a new SOTA where *RoboRefer* achieves **89.6%** accuracy on spatial understanding benchmarks, and surpasses *Gemini 2.5 Pro* by **17.4%** on complex spatial referring tasks.
- **Impact:** Garnered over **45,000 downloads** for the open-sourced assets. Facilitated evaluation of spatial referring in complex scenes for the most advanced models like *Qwen3-VL* and *Gemini-Robotics-1.5*.
- **Supervisor:** [Lu Sheng](#) (Prof. of Beihang University), [Shanghang Zhang](#) (Prof. of Peking University)

Enhancing Text-to-Image Generation via Fully AI-Driven Feedback Dec. 2023 – Aug. 2024

- **Publication:** “AGFSync: Leveraging AI-Generated Feedback for Preference Optimization in Text-to-Image Generation”, *AAAI 2025 (Published)*. [\[Project page\]](#).
- **Overview:** Developed a fully AI-driven framework to enhance Text-to-Image models (e.g., SDXL, SD v1.5) via Direct Preference Optimization (DPO), eliminating the need for costly human annotation.
- **Methodology:** Utilized a self-training strategy that leverages constraints derived from instructions and the physical world to autonomously generate preference data. Fine-tuned Text-to-Image models via DPO.

- **Performance:** Achieved a **7%** improvement in text consistency and aesthetic quality for SDXL. Enabled Text-to-Image models to generate higher-quality images in **67%** of samples compared to baselines. Surpassed previous SFT approaches (using MJHQ-30K) by **5%**.
- **Supervisor:** [Yemin Shi](#) (PhD, Peking University; Co-founder & CTO of Dynamics Lab)

Bias Mining and Mitigation Algorithm

Dec. 2022 – Jun. 2023

- **Publication:** “M3Fair: Mitigating Bias in Healthcare Data through Multi-Level and Multi-Sensitive-Attribute Reweighting Method”, *Health Data Science*, 2023, *Beijing* (Abstract **Accepted** for Poster) [\[Project page\]](#).
- **Overview:** Developed a generalizable and scalable algorithm to detect and mitigate biases across multiple features in Electronic Health Records (EHR).
- **Methodology:** Introduced a **multi-level reweighting strategy** that classifies multiple sensitive attributes into different bias levels. Proposed a multi-level reweighting algorithm to mitigate bias within different samples, ensuring minimum bias during the training process.
- **Performance:** Demonstrated superior effectiveness, successfully mitigating bias in **91.67%** of samples and outperforming previous mitigation methods on **83.3%** of cases.
- **Recognition:** Won the **Third Prize** (Top 5) in the global [2023 NIH Bias Detection Challenge](#).
- **Supervisor:** [Lu An](#) (PhD, NC State University; AI Engineering Manager of NVIDIA)

Safety Alignment via Localized On-Policy Distillation

Jan. 2026 – May 2026

- **Publication:** “SafeSteer: Localized On-Policy Distillation for Efficient Safety Alignment”, *EMNLP 2026* (Under review). [\[Project page\]](#).
- **Overview:** Proposed *SafeSteer*, a lightweight safety alignment framework that mitigates the “alignment tax” by shifting from global trade-offs to localized modifications on sparse safety-related tokens.
- **Methodology:** Augmented standard on-policy distillation by constructing an activation-steered safety teacher. Designed a safety token selection algorithm based on refusal direction to restrict the reverse KL penalty to sparse safety subsets.
- **Performance:** Achieved SOTA safety-capability trade-offs across 4 LLMs (e.g., Qwen2.5-7B, Llama-3-8B). Drastically reduced alignment costs by utilizing **merely 100 harmful samples**.
- **Supervisor:** [Lei Sha](#) (Prof. of Beihang University)

INTERNSHIP & RESEARCH EXPERIENCE

School of Computer Science, Peking University

Dec. 2024 – Nov. 25

- **Description:** Led the 3D spatial dataset construction for the [RoboRefer](#) and [RoboTracer](#) projects, and assisted in training the RoboBrain 2.0 model using the [RefSpatial](#) dataset.

School of Electronic and Computer Engineering, Peking University

Dec. 2023 – Aug. 2024

- **Description:** Took charge of the [AGFSync](#) project and applied the framework to improve the performance of a commercial interior design model, in collaboration with Shenzhen RabbitPre AI Technology Company.

PROJECT EXPERIENCE

TrustMe: A Trustworthy AI Platform for Clinical Decision-Making

Dec. 2022 – Sep. 2023

- **Description:** Built a trustworthy AI platform to assist clinical decision-making based on electronic medical records. The platform integrates data analysis with bias detection and mitigation algorithms, surpassing previous AI diagnostic models by 10%. Demonstrating its real-world value, the system has been adopted by multiple **top-tier Grade 3A hospitals** in China. [\[News\]](#)
- **Role:** Project Leader. Coordinated team members' work and developed the core bias detection algorithms.
- **Achievements:** This project won multiple national awards including the Grand Prize (**First Place**) at the 2023 “Challenge Cup” National Competition. [\[News\]](#)

AWARDS

- 2023 National College Student “Challenge Cup” (National Grand Prize, Top 1)
- 2023 NIH Bias Detection Competition (International Third Prize, Top 5)
- 2023 “Internet+” Innovation and Entrepreneurship Competition (Second Prize, Top 10%)
- 2023 & 2024 Beijing College Student Entrepreneurship Project (Excellence Award, Top 5%)

- 2023 Fengru Cup Main and Industrial Track at Beihang University (Second Prize, Top 3%)
- 2024 Outstanding Graduate of Beijing (Top 5%)
- 2024 May Fourth Medal Nomination Award (Top 0.1%)
- 2023 Aviation Industry Scholarship (Top 1%)
- 2023 Star of the School of Software (Top 3%)
- 2023 Merit Student of Beihang University (Top 5%)