YUTONG BIAN

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PERSONAL STATEMENT

As a third-year undergraduate pursuing a dual degree in Communication Engineering from Xidian University and Heriot-Watt University, I have developed strong hands-on experience in the development, evaluation, and training of **MLLM-based Graphical User Interface (GUI) Agents**. My primary research interest lies in advancing the cognitive capabilities of GUI Agents to exhibit more human-like reasoning and generalization, with a core focus on pioneering novel training methodologies. I am also enthusiastic about exploring related fields such as Reinforcement Learning for Large Language Models (RL4LLM), LLM Reasoning, and Tool-Use Agents. I am seeking a PhD position where I can apply and expand my expertise to contribute to your research team.

EDUCATION

Xidian University, China & Heriot-Watt University, UK — Xi'an, China & Edinburgh, UK
B.Eng. in Communication Engineering (Dual Degree) — 2021.9 - 2026.6
GPA: 3.8/4.0

WORKING MANUSCRIPTS

1. Sirui Hong*, **Yutong Bian***, Xinbing Liang, et al. **RealDevWorld: Benchmarking Production-Ready Software Engineering**, *COLM 2025 Under Review*.

INTERNSHIP EXPERIENCE

DeepWisdom — Shenzhen, China
Research Intern | *Supervisor: Jinlin Wang, Chenglin Wu* — Sep. 2024 - Present
Topic: GUI Agent; Agent Training; Benchmark

PROFESSIONAL PROJECTS

OSAgent: Cross-platform Intelligent Assistant — Sep. 2024 - May. 2025

Focus: Developing a universal, stable, and efficient GUI agent framework for various operating systems.

- Contributed to the overall architecture design, focusing on perception, planning, and execution modules.
- Optimized perception tools (OCR, element detection/description) for robust environmental understanding.
- Developed task management mechanisms within the planning module, incorporating reflection and memory capabilities.
- Innovated a unified, cross-OS action space using Python code execution (e.g., pyautogui), enhancing flexibility and leveraging MLLM's coding proficiency.
- Achieved state-of-the-art performance on SpaBench (mobile) cross-application tasks (26.7% vs 13.3% by previous SOTA).

RealDevWorld: Benchmarking Production-Ready Software Engineering — Oct. 2024 - May. 2025

Role: Lead design, implementation, and evaluation of the AppEvalPilot. Paper under review (COLM 2025).

- Designed AppEvalPilot to dynamically assess software functionality via UI interaction, overcoming static analysis limitations for LLM-based software engineers.
- Implemented automated test case generation using few-shot learning and rule-based methods for comprehensive coverage.
- Developed test execution agent capable of complex GUI interactions using multi-modal inputs (XML, vision) and a Plan-Act framework.
- Created a test result evaluation module to compare actual vs. expected outcomes, with JudgeLLM for objective analysis.

- Experimental results showed AppEvalPilot's assessments correlate highly with human experts (0.91), significantly improving efficiency (55% faster, 94.8% cheaper).

R1-Like GUI Agent Training: Efficiently Improving GUI Agent's Grounding Capability Apr. 2024 - May. 2025

Focus: Enhancing GUI agent's core element Grounding Capability using GRPO and a refined dataset.

- Designed and implemented a data collection and refinement pipeline: quality filtering, difficulty filtering, and diversity filtering.
- Developed a multi-component reward function for effective policy optimization.
- Demonstrated that 1k meticulously selected data points can achieve performance comparable to SOTA models trained on millions of samples.
- Significantly improved GUI grounding accuracy on benchmarks: ScreenSpot up to 86.48% (near SOTA 87.18%), ScreenSpotPro up to 26.50% (near SOTA 28.78%).

SKILLS

- Programming Languages: Python.
- Artificial Intelligence: LLM application and fine-tuning(RFT and SFT), GUI agent development, MLLM training for perception and interaction.
- Frameworks & Tools: Linux, Git, Overleaf, Docker, Swift, Ollama, Vllm.