Multi-SWE-bench: A Multilingual Benchmark for Issue Resolving

https://multi-swe-bench.github.io

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NEURAL INFORMATION PROCESSING SYSTEMS

Can your LLM fix bugs beyond Python?

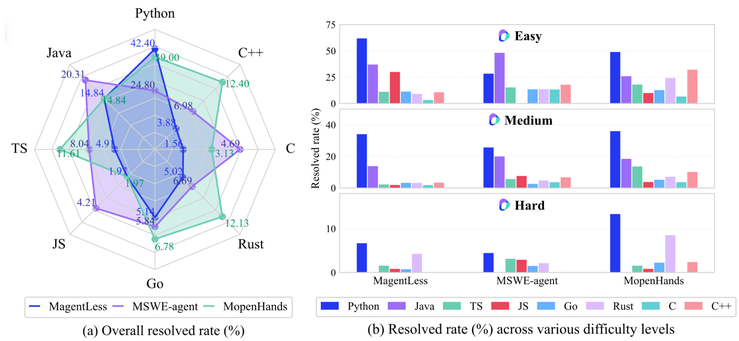
The task of issue resolving aims to modify a codebase to generate a patch that address a given issue. However, most existing benchmarks focus almost exclusively on Python, making them insufficient for evaluating LLMs across different programming languages. To bridge this gap, we introduce a multilingual issue-resolving benchmark, called Multi-SWE-bench, covering 8 widely used programming languages: Python, Java, TypeScript, JavaScript, Go, Rust, C, and C++. It includes a total of 2,132 high-quality instances, carefully curated by 68 expert annotators, ensuring a reliable and accurate evaluation of LLMs on the issue-resolving task. Based on human-annotated results, the issues are further classified into three difficulty levels. We evaluate a series of state-of-the-art models on Multi-SWE-bench, utilizing both procedural and agent-based frameworks for issue resolving.

- 💥 1,632 real-world issues
- ✅ Verified by 68 engineers
- 📦 Dockerized, reproducible, battle-tested
- 🧠 Covers easy, medium, and hard bug fixes
- 📊 Designed to benchmark LLMs as true dev agents

To scale beyond benchmarks, we also launch Multi-SWE-RL —

- 🎮 An open-source RL community to build interactive training environments.
- 🌱 4,723 containerized issue-resolving tasks, 7 languages, and counting.
- 🤝 We invite the community to contribute, expand, and shape the future of software-native RL.

How well do today's top LLMs really perform?



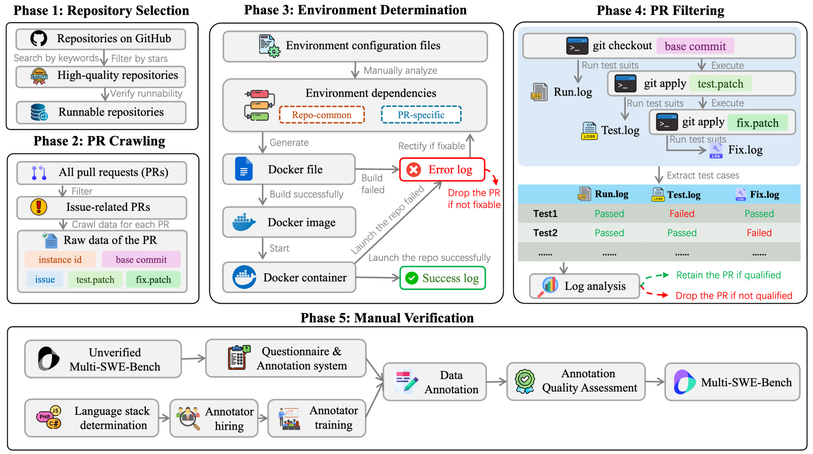
(a) Overall resolved rate (%) (b) Resolved rate (%) across various difficulty levels

We evaluated **9** models (GPT-4o, o1/o3, Claude 3.5/3.7, DeepSeek, Doubao...) across **3** agents: Agentless, SWE-agent, and OpenHands.

🔍 What happened? Python? Solid. Java? Slips. TS/JS/C++? Gets messy. C/Rust/Go? Still a nightmare.

Even the best agent (MopenHands) only gets ~12.13% on Rust.

Multi-SWE-bench Construction



Eight widely used programming languages are selected to construct Multi-SWE-bench through five phases. As shown the above figure, the first four phases create a large pool of candidate data for each language, while the fifth phase finalizes the Multi-SWE-bench through manual verification.

Experimental Results

We compared 9 top LLMs × 3 agents × 8 languages × 3 difficulty levels.

🚨 Even the best models collapse beyond Python.

Methods	Models	All	Python	Java	TS	JS	Go	Rust	C	C++
MagentLess	GPT-4o	11.40	36.20	11.72	2.23	1.40	2.80	5.86	1.56	6.98
	OpenAI-o1	16.23	48.20	21.09	5.80	5.06	4.44	7.11	1.56	5.43
	OpenAI-o3-mini-high	13.65	46.40	5.47	0.45	2.81	3.97	7.95	3.91	1.55
	Claude-3.5-Sonnet	13.56	42.40	14.84	4.91	1.97	5.14	5.02	1.56	3.88
	Claude-3.7-Sonnet	14.35	44.60	14.06	3.57	1.97	5.84	5.44	2.34	3.10
	DeepSeek-V3	13.23	41.00	7.03	6.70	3.37	5.37	5.02	3.13	1.55
	DeepSeek-R1	14.40	42.20	22.66	6.25	4.49	3.74	6.69	0.78	3.10
	Qwen2.5-72B-Instruct	8.26	26.80	10.94	4.46	0.84	1.40	2.51	0.78	0.78
	Doubao-1.5-pro	7.83	26.20	5.47	2.23	1.12	2.10	4.18	0.00	0.00
	Doubao-1.5-thinking	15.24	44.80	13.28	7.59	5.62	4.44	7.11	4.69	3.88
	Gemini-2.5-Pro	18.01	49.00	21.88	11.61	8.71	6.07	5.44	9.38	2.33
	Llama-4-Maverick	13.56	37.80	14.84	9.38	5.06	3.50	6.28	3.91	5.43
MSWE-agent	GPT-4o	6.29	18.80	12.50	0.45	0.84	2.34	2.09	1.56	2.33
	OpenAI-o1	11.07	28.80	21.88	4.02	4.21	4.67	4.18	3.91	3.88
	OpenAI-o3-mini-high	10.74	28.60	16.41	4.91	4.21	3.97	5.02	2.34	5.43
	Claude-3.5-Sonnet	11.21	24.80	20.31	8.04	4.21	5.84	6.69	4.69	6.98
	Claude-3.7-Sonnet	17.17	45.80	23.44	11.16	4.78	5.37	6.69	8.59	11.63
	DeepSeek-V3	4.55	4.20	11.72	2.68	2.53	4.44	5.86	2.34	7.75
	DeepSeek-R1	2.95	2.00	9.38	5.80	1.40	2.10	2.09	0.78	6.20
	Qwen2.5-72B-Instruct	2.49	8.60	2.34	0.00	0.56	0.47	0.42	1.56	0.00
	Doubao-1.5-pro	4.88	12.40	7.03	1.79	1.40	2.10	1.67	2.34	6.20
	Doubao-1.5-thinking	10.46	30.60	11.72	7.14	1.69	4.21	3.35	0.78	4.65
	Gemini-2.5-Pro	14.63	27.80	28.91	8.93	7.58	9.81	10.04	9.38	8.53
	Llama-4-Maverick	3.52	2.00	15.63	4.46	2.25	2.80	2.51	0.00	6.98
MopenHands	GPT-4o	8.21	25.60	9.38	0.00	1.97	3.50	3.35	0.00	3.88
	OpenAI-o1	6.10	16.00	3.91	0.45	3.65	3.74	2.51	3.13	3.88
	OpenAI-o3-mini-high	7.55	20.40	10.16	0.45	3.37	2.34	5.02	1.56	6.98
	Claude-3.5-Sonnet	15.24	39.00	14.84	11.61	1.97	6.78	12.13	3.13	12.40
	Claude-3.7-Sonnet	19.32	52.20	21.88	2.23	5.06	7.48	15.90	8.59	14.73
	DeepSeek-V3	8.72	27.80	9.38	1.34	1.12	0.70	4.60	3.13	7.75
	DeepSeek-R1	8.02	26.00	8.59	0.45	2.53	0.00	4.60	2.34	4.65
	Qwen2.5-72B-Instruct	2.02	4.40	3.13	0.00	0.84	1.40	1.67	0.78	2.33
	Doubao-1.5-pro	2.91	8.80	0.78	0.00	1.12	1.64	0.84	0.00	3.10
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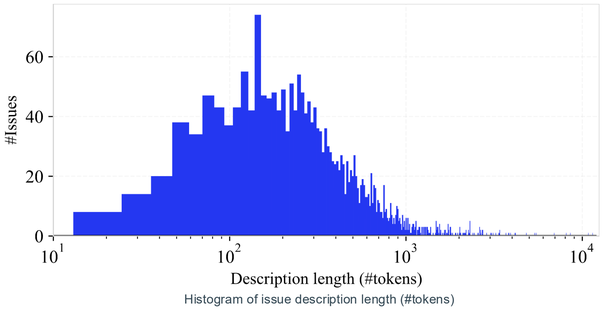
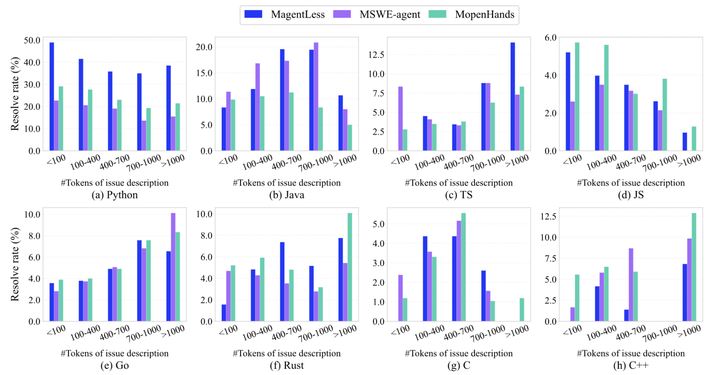
	Llama-4-Maverick	7.46	14.40	6.25	8.04	4.78	5.61	5.02	3.13	3.10

Resolved rate (%) of different models on Multi-SWE-bench



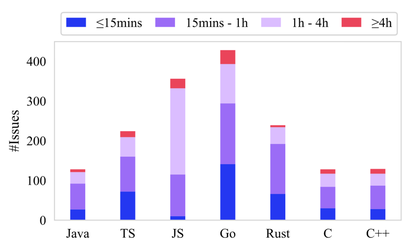
Histogram of issue description length (#tokens)

The above figure illustrates the distribution of issue lengths (in tokens) in Multi-SWE-bench, which follows a power law, with the majority of issue being under 1,000 tokens. To explore the effect of description length, the issues are categorized into 5 intervals: <100, 100-400, 400-700, 700-1000, and >1000 tokens. The absence of a corresponding bars indicates cases where no issues are successfully resolved.



Distribution of estimated time consumption of issues in Multi-SWE-bench

We recorded the estimated time required to resolve each issue, categorized into four buckets: ≤15 minutes, 15 minutes-1 hour, 1-4 hours, and ≥4 hours. We use this time-based annotation to define difficulty levels across all languages: easy (≤15 minutes), medium (15 mins-1 hour), and hard (≥1h).



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