DevFest

Shenzhen

Agents on Mobile 2025

On-device Model 与多端协同

El Zhang (2BAB)

Google Developer Groups

DevFest

Shenzhen

- Google Developer Expert (Android)
- Tech Lead at an AI Startup
- Founder of BinaryTape
- Author of Extending Android Builds - a book officially endorsed by Gradle
- Google 2025 出海创业加速器导师 / 出海日讲师

BINARY TAPE

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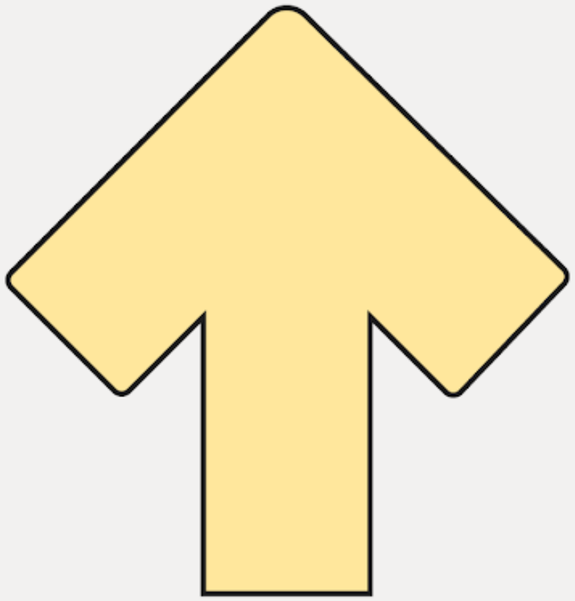
01

端侧小模型 Recap

年度趋势

“互动环节”



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Gemma 2 / 3(n)

模型系列	模型参数大小	是否多模态	Max Context Length on Mobile	发布日期
Gemma 2	2B, 9B, 27B	否	~2048	24 年 6 月
Gemma 3	1B, 4B, 12B, 27B	是（4B 以上支持图片）	2048~4096	25 年 3 月
Gemma 3n	E2B, E4B	是（图片、音频）	4096	25 年 6 月

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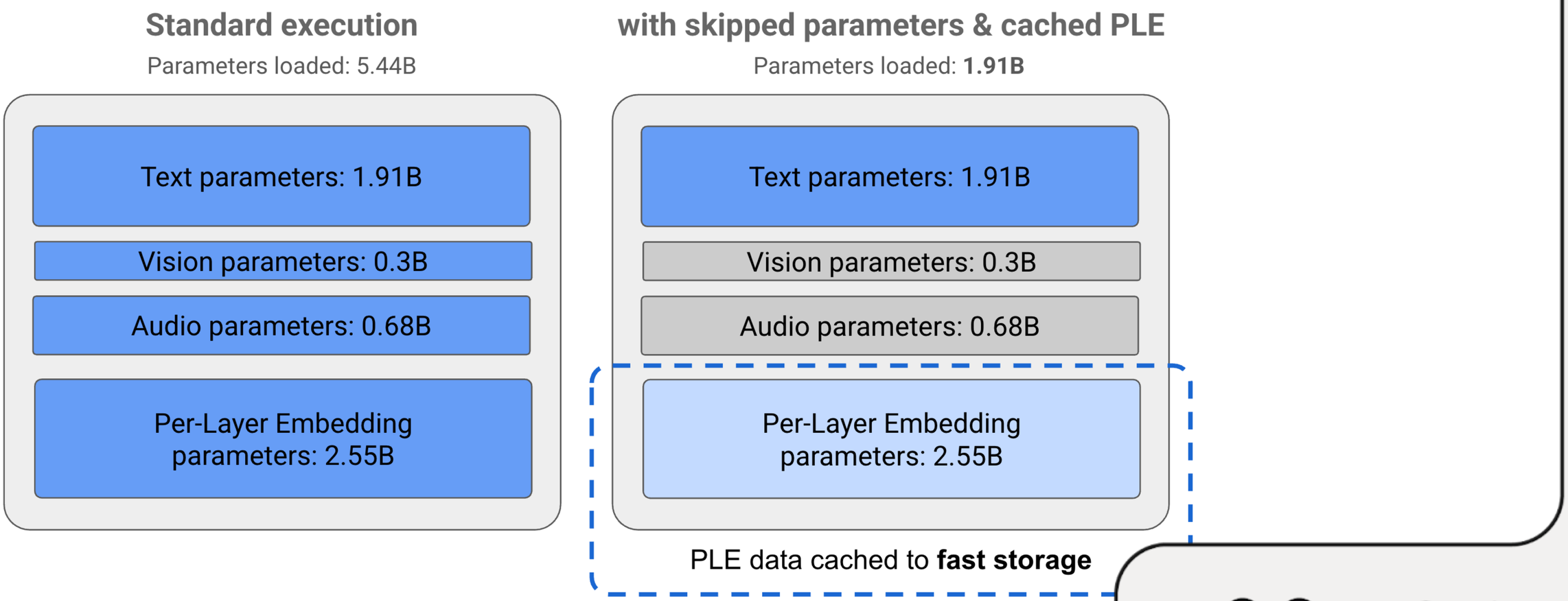
Gemma 3n



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Gemma 3n

- MatFormer Arch
- 前馈神经网络（FFN）从单一结构变成嵌套类型（类似套娃）
- 可以根据设备的硬件情况在模型加载时决定使用不同复杂度的网络

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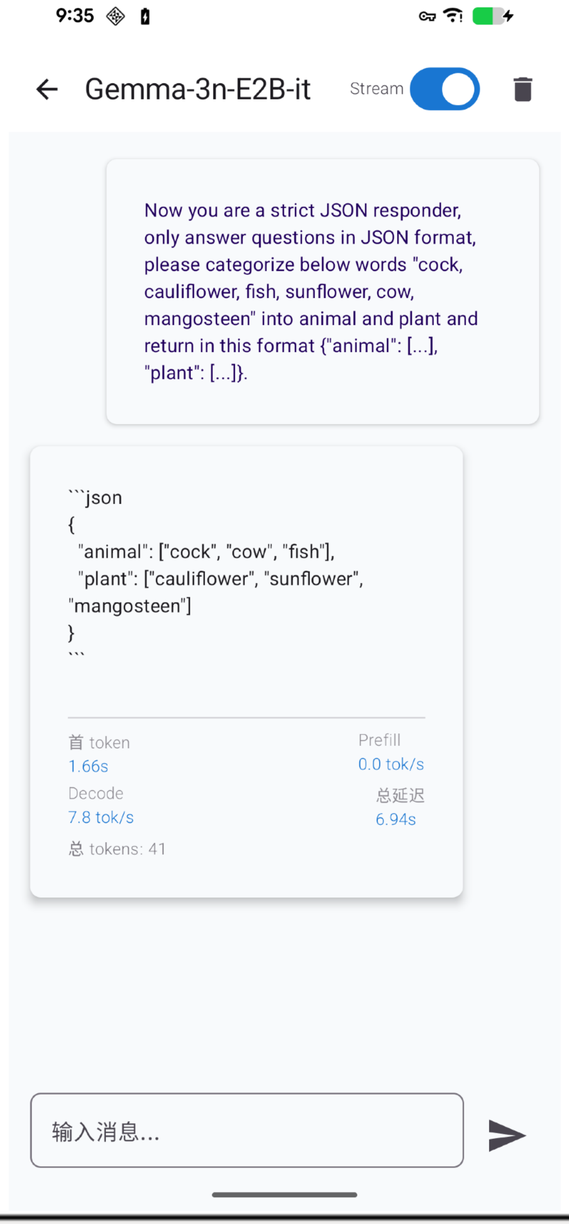
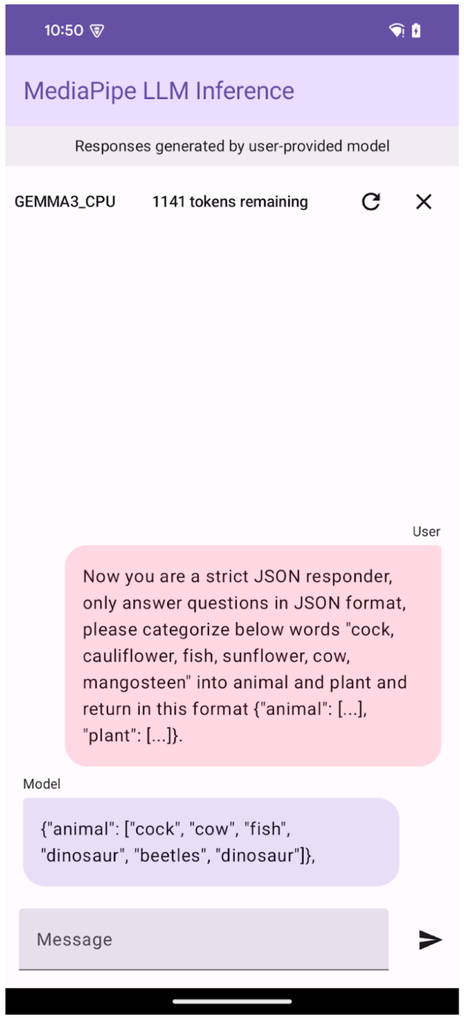
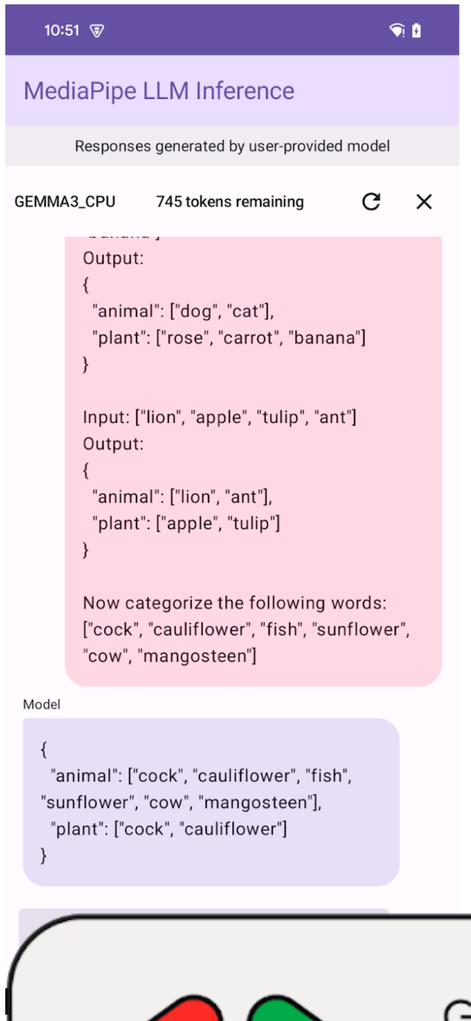
Gemma 3n

全面提升：

- 推理能力
- 知识量
- 固定输出格式
- 内存占用







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Gemini Nano v2 / v3 with MLKit

模型系列	是否多模态	发布日期
Gemini Nano v2	是（图片）	2024 年 10 月
Gemini Nano v3	是（图片、音频）	2025 年 8 月

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Gemini Nano v2 / v3 with MLKit

Feature-specific API device support

The Summarization, Proofreading, Rewriting, and Image Description APIs are available on the following devices, with plans to expand support to additional devices:

- Google: Pixel 10, Pixel 10 Pro, Pixel 10 Pro XL, Pixel 10 Pro Fold, Pixel 9, Pixel 9 Pro, Pixel 9 Pro XL, Pixel 9 Pro Fold
- Honor: Honor 400 Pro, Magic 6 Pro, Magic 6 RSR, Magic 7, Magic 7 Pro, Magic V3, Magic V5
- iQOO: iQOO 13
- Motorola: Razr 60 Ultra
- OnePlus: OnePlus 13, OnePlus 13s, OnePlus Pad 3
- OPPO: Find N5, Find X8, Find X8 Pro, Reno 14 Pro
- POCO: POCO F7 Ultra, POCO X7 Pro
- realme: realme GT 7 Pro, realme GT 7T
- Samsung: Galaxy S25, Galaxy S25+, Galaxy S25 Ultra, Galaxy Z Fold7
- vivo: vivo X200, vivo X200 Pro, vivo X Fold3 Pro, vivo X Fold5
- Xiaomi: Xiaomi 15 Ultra, Xiaomi 15, Xiaomi 15T Pro, Xiaomi 15T, Xiaomi Pad mini

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Gemini Nano v2 / v3 with MLKit

Prompt API device support

Prompt API is currently supported on the following devices:

nano-v2	• Google: Pixel 9, Pixel 9 Pro, Pixel 9 Pro XL, Pixel 9 Pro Fold • Honor: Magic V5, Magic 7, Magic 7 Pro • iQOO: iQOO 13 • Motorola: Razr 60 Ultra • OnePlus: OnePlus 13, OnePlus 13s, OnePlus Pad 3 • OPPO: Find N5 • POCO: POCO F7 Ultra • realme: realme GT 7 Pro • Samsung: Galaxy Z Fold7 • Xiaomi: Xiaomi 15 Ultra, Xiaomi 15
nano-v3	• Google: Pixel 10, Pixel 10 Pro, Pixel 10 Pro XL, Pixel 10 Pro Fold

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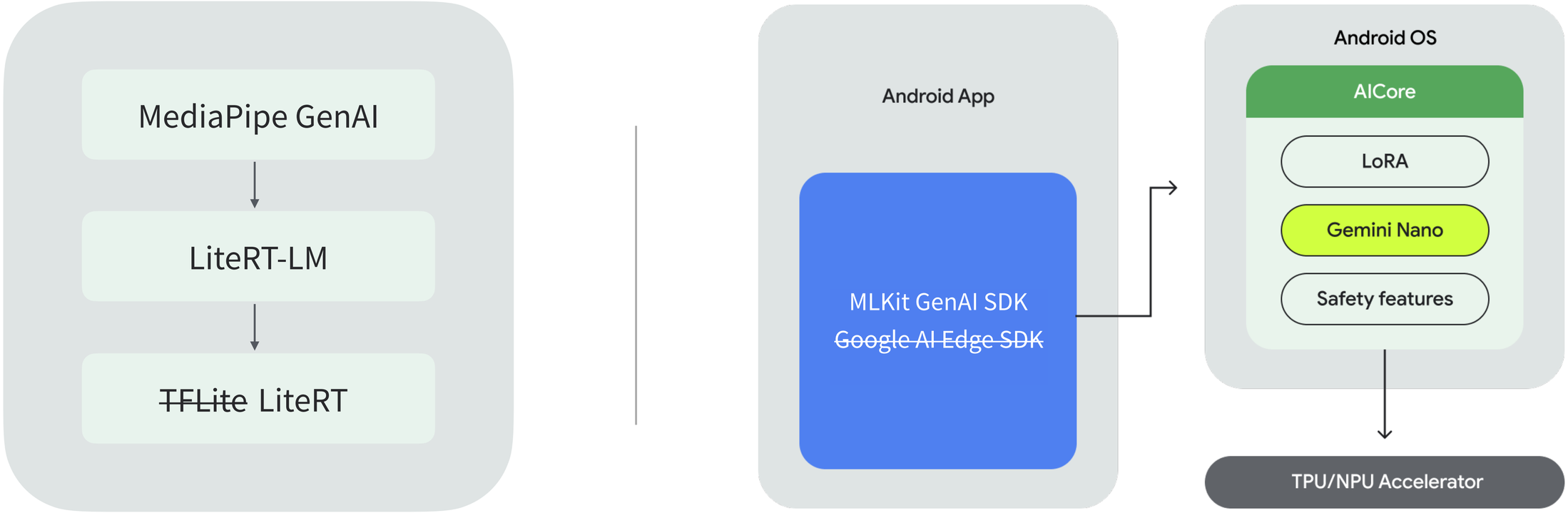
Google 的 On Device AI 推理框架



Gemma and more

Gemini Nano

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Google 的 On Device AI 演进路线

简介　评论　弹幕功能关闭

Google 中国
31万粉丝　1413视频
+ 关注

从技术生态到个人助理 | 一场对谈，看懂移动端 AI 的演进路线图 (上)

1078　0　2025年9月19日 17:00　1人正在看
BV12yWuz2Exw　未经作者授权禁止转载

在本期视频中，我们有幸邀请到 Google Core ML 团队的 Li Na，在 Google I/O Connect 上海现场与两位 Android GDE——2BAB 和 Yuang 展开深度对话。

我们深入探索了 Google 端侧 AI 的完整生态，从底层的 AICore 到高级的 ML Kit，再到为开源模型提供实验通路的 LiteRT (前 TensorFlow Lite)，旨在从技术层面为出海开发者提供支持和指导。访谈还分享了 Gemini Nano 的最新应用，NPU 带来的性能提升，以及端侧 LoRA 微调的巨大潜力。欢迎您观看视频，轻松掌握移动端 AI 的未来方向。

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Gecko-110m-en

litert-community/Gecko-110m-en

This model provides a few variants of the embedding model published in the Gecko paper that are ready for deployment on Android or iOS using LiteRT stack or google ai edge RAG SDK.

Use the models

Android

- Try out the gecko embedding model in the google ai edge RAG SDK. You can find the SDK on GitHub or follow our android guide to install directly from Maven. We have also published a sample app.
- Use the sentencepiece model as the tokenizer for the Gecko embedding model.

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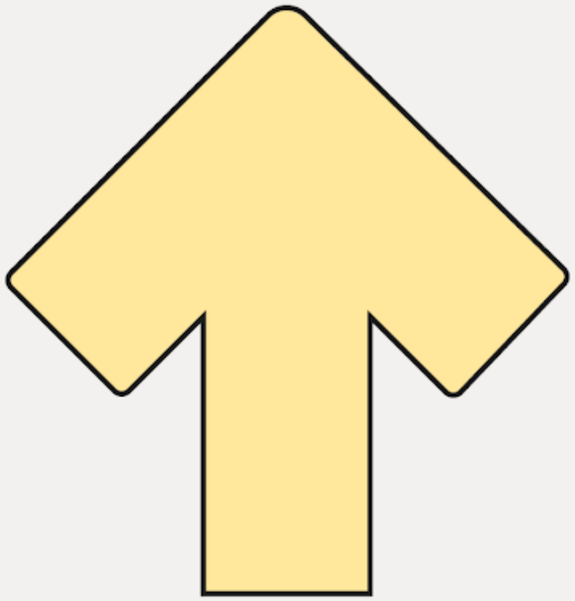
02

多端协同 Agent

Gemma 3n 与 Gemini 2.5



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现有场景和长远目标

当前：

- 非常具体，单一任务
- Workflow 场景有限

长远：

- 复杂场景适合更高权限的系统级应用
- Agentic/AGI 考验模型大小和设备性能

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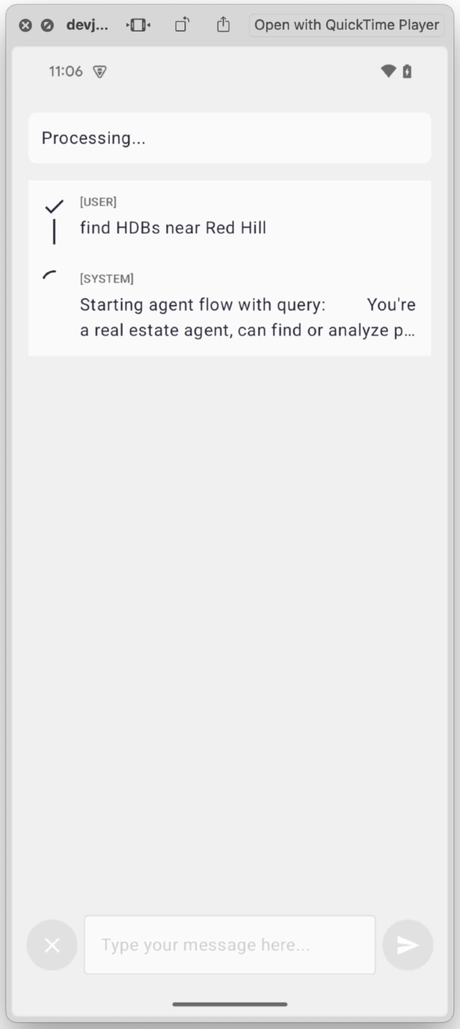
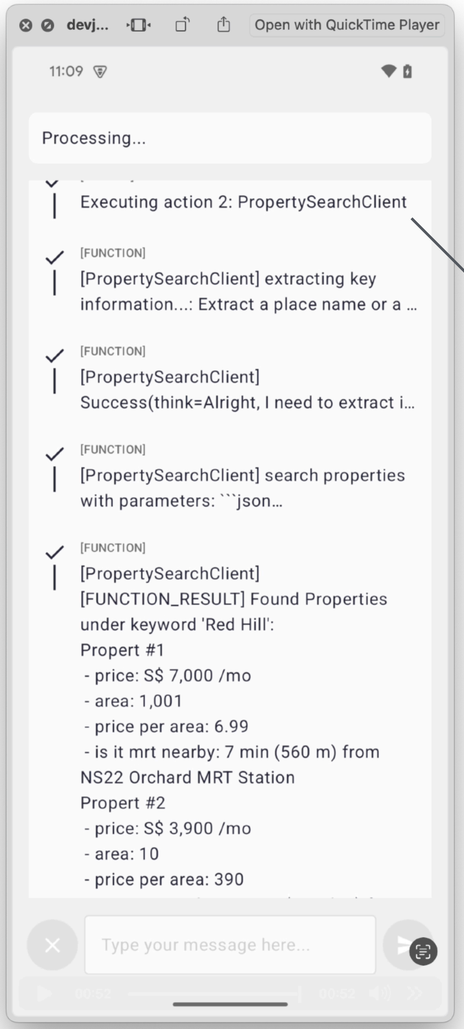
固定场景和 API

Function Calling

- 远程 API





Executing action 2: PropertySearchClient

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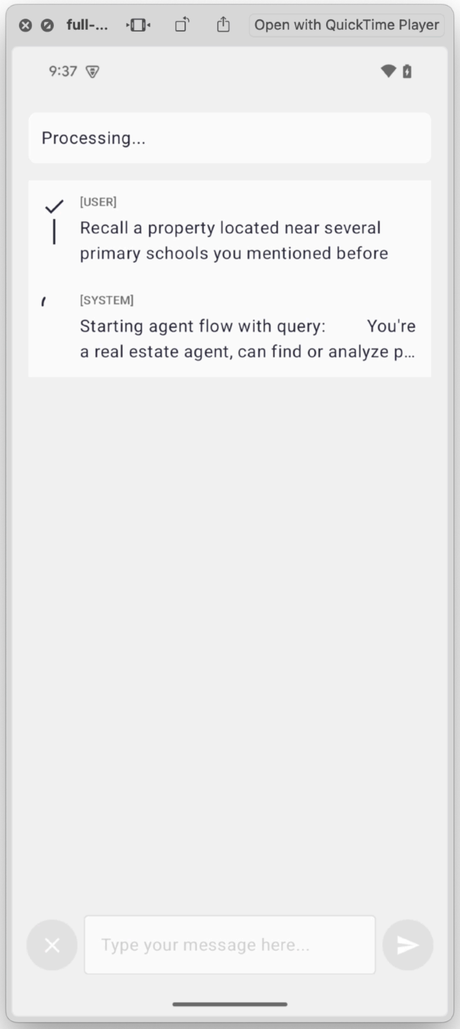
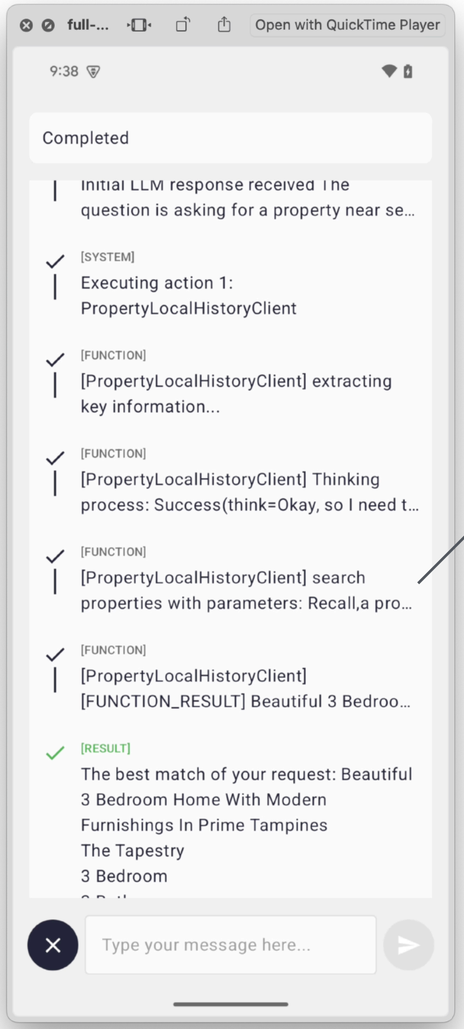
固定场景和 API

RAG

- Gecko-110m-en





[PropertyLocalHistoryClient] search properties with parameters: Recall,a pro...

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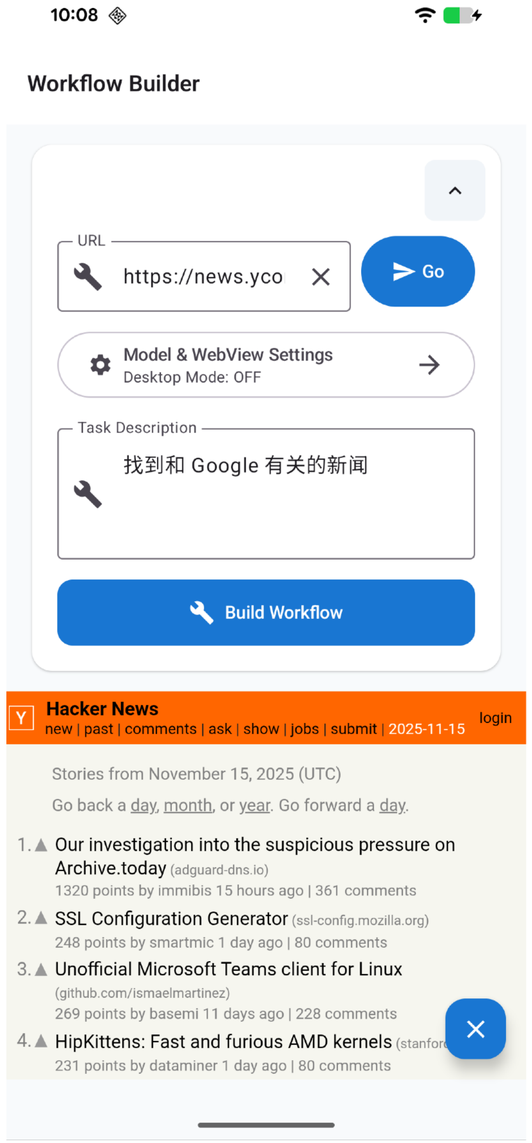
通用的订阅管理器

- 不限制网站
- 不限制任务类型（查找、过滤、总结等等）
- （仅受限于模型 Context Length）



“互动环节”

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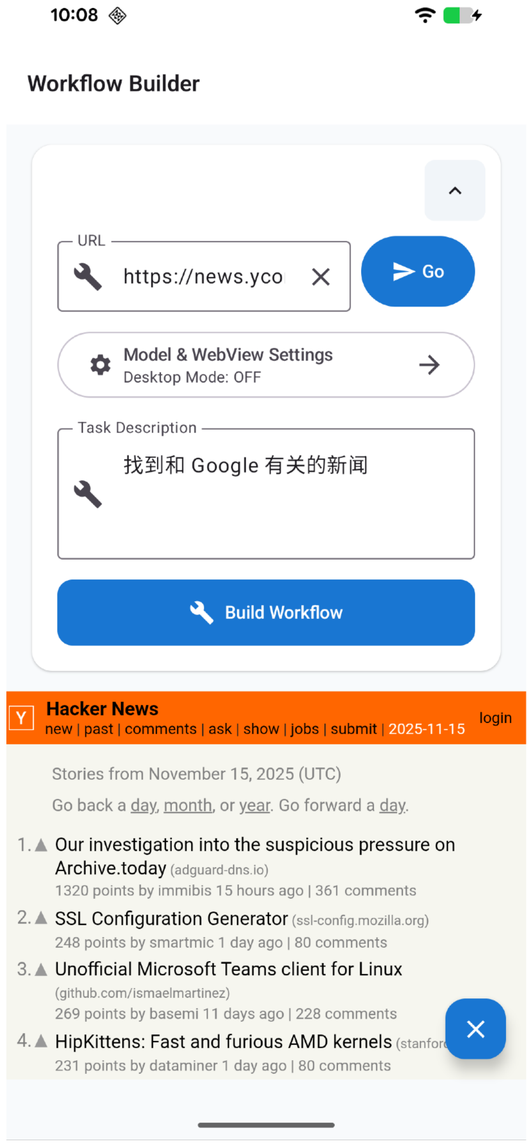
通用的订阅管理器

Agents on Mobile 2025

On-device Model 与多端协同



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Phase 1: Build

工作流构建阶段

Gemini 2.5 Pro/Flash

输入
用户目标 + 初始URL

加载页面
WebView 加载并简化 HTML

Propose
LLM 分析并提议下一步动作

Verify
在 WebView 中执行验证

Commit
成功后添加到工作流

↻ 循环最多 20 轮

→

Workflow JSON
完整的工作流定义
包含所有步骤、类型
和变量映射

→

Phase 2: Execute

工作流执行阶段

Gemma 3n E2/4B

加载工作流
读取步骤列表和配置

变量解析
处理 {{variable}} 占位符

执行步骤
JS / LLM / Loop / Navigate

错误重试
最多 3 次指数退避重试

存储结果
保存到变量上下文

→ 顺序执行所有步骤

→

执行结果
流式返回每步结果
包含状态、数据
和错误信息

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Demo1

Demo2

今日还未涉及的内容

- 图片分析的加入
- 后台执行，每日早上推送

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```
{
  "thought": "Detailed step-by-step reasoning of your current analysis and plan…”,
  "workflowStepsBuiltSoFar": [
    {
      "id": "stepId",
      "description": "Human-readable description of what this step does",
      "type": "js" | "llm" | "loop" | "navigate",
      "payload": {
        "code": "/* For js: JavaScript code with {{placeholder}} support */",
        "query": "/* For llm: Concise task description*/",
        "context": "/* For llm: {{previousResult}} providing the data */",
        "url": "/* For navigate: URL to load, supports {{placeholders}} */",
        "iterateOn": "/* For loop: {{arrayVariable}} to iterate over */",
        "loopVariable": "currentItem",
        "navigateToField": "/* For loop (optional): field name in item containing URL to navigate to */",
        "steps": [/* For loop: nested workflow steps */]
      },
      "outputVariable": "resultName"
    }
  ],
```

```
  "nextAction": {
      "toolName": "js" | "navigate" | "finish",
      "parameters": {
        "code": "/* For js tool: The JavaScript code to execute now */",
        "url": "/* For navigate tool: Full URL to load */"
      }
    },
    "isDone": false,
    "initialUrl": "{{current_page_url}}"
  }
```

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Thank You! / Q&A

El Zhang (2BAB)

Google Developer Expert - Android

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