FlowWrite 技术报告

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FlowWrite 是一款专注于 AI 辅助写作的软件，专门面向高质量长篇写作的场景。软件提供蓝图式工作流编排、高级查询函数（RSA、RLM 等）、多种工作流控件（环状运行、冻结等）、内置 agent、外部 Restful API 接口和官方 agent skill。本文将从产品愿景、关键功能、技术选型、交互设计、软件架构和具体用例等方面介绍这款软件。软件源代码在 Github 开源

一、 引言

受限于如今的模型性能，AI 辅助写作很难找到一站式的解决方案，为此，FlowWrite 希望提供一种高度定制化且足够现代的范式来回答这个问题。

当以 chatgpt 为首的，基于 LLM 的 chat-ai-app 刚刚进入人们视野的时候，第一个被广泛关注的概念是**提示词工程**[1]，而在 2025 年初到 2026 年初的 AI 编程大爆发和 agent 大爆发中[2]，另一个在幕后扮演重要角色的概念是**上下文工程**。这两个概念几乎涵盖了当下 LLM 应用的所有注意事项，而对于 AI 辅助写作这个领域，FlowWrite 提供的范式同样围绕这两个概念展开。

A. 节点工作流

假如将 LLM 抽象为 `Model(query) = Answer`，那么常见的 chat-ai-app 多是以如下的形式组织 `query` 的：

```
"query": [
    { "role": "user", "content": "你好" },
    { "role": "assistant", "content": "你好! 有什么我
可以帮助你的吗? " },
    { "role": "user", "content": "你是谁" },
  ......
]
```

而节点工作流则是这种形式的超集，Unreal Engine 的蓝图、Comfy-UI 或是如今已经成为 agent 领域经典实践的 langGraph 都采用了这种组织方式。

FlowWrite 的一个节点工作流可以描述为 `[Model]_n`，其中 `Model_k.query = fuc_k(m.Answer | m in M_k)`，`M_k` 是 `[Model]_n` 的一个子集，`fuc_k` 是自定义函数，比如 `[fuc_add(a, b, c) → a + "+" + b + "+" + c]["1", "2", "3"] = "1+2+3"`。

这样的工作流一般来说会有满足 DAG 形式的依赖关系，使用 Kahn 算法排序后即可逐个解析，如果有环状依赖出现，在工程上则可以设置停机收敛条件。

FlowWrite 还提供了不少有趣且实用的功能，这些功能使 FlowWrite 的境界达到了节点式工作流的超集。这些功能在 section I B 和 section I C 中有进一步的描述。

另一个值得一提的现象是节点工作流的调用方式天然带有上下文压缩的色彩，`M_k.query` 完全不会出现在其余任何 `M_p.query` 中。section I D 详细介绍了 FlowWrite 的上下文策略。

B. 高级查询函数与高级功能

有非常多的研究如 RSA[1] 和 RLM[2] 表明，递归和复杂迭代可以作为 LLM 推理的强力可选项，这些推理过程显然是 section I A 中提到的节点工作流无法涵盖的。FlowWrite 提供了一组高级查询函数 `[adv_fuc]_n`，可以在工作流中使用。

C. Agent 赋能

FlowWrite

D. 摘要与上下文艺术

众所周知，今天主流 LLM 的上下文窗口十分有限，即使有足够的窗口长度，模型的注意力也有限。截至 2026 年 2 月，我们依然不能说所谓“上下文腐化”[3] 的现象已经不存在了，作为侧面的佐证，上下文管理器仍然是各 AI 编程工具的重要组件。

考虑到如今一些较新颖的研究和工程如 RLM[2]，或是一众 AI 编程工具，

```
class FlowWriteDB extends Dexie {
  workflows!: Table<WorkflowRecord>;
  settings!: Table<SettingsRecord>;

  constructor() {
    super('FlowWriteDB');

    this.version(1).stores({
```

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[1] reddit 的 PromptEngineering 板块创建于 2021 年 2 月 26 日
[2] Anthropic 于 2024 年 11 月 25 日开源了他们的 MCP 协议，可以看作是 agent 时代开始的里程碑事件

FIG. 2 A column spanning figure. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aeque doleamus.

```
      workflows: 'id, name, updatedAt',
      settings: 'key'
    });
  }
}
```

This is a template for submission of manuscripts to Physical Review Accelerators and Beams (PRAB) using the great, modern and **blazingly fast** typesetting system Typst Equations can be typeset inline like $f_{\mathrm{a}(x)}$, and in display mode:

$$\nabla \times E = -\frac{\partial B}{\partial t}$$

$$\oint_{\partial A} E \,\mathrm{d}s = -\iint_{A} \frac{\partial B}{\partial t} \,\mathrm{d}A$$

By adding a label

$$e^{\mathrm{i}\,\pi} + 1 = 0 \tag{1}$$

they can be referenced as in Eq. (1). The same works for Fig. 1. Figure 1 comes before Figs. 2 and 3. Referring to section II A or the data in table I is also possible.

二、 技术选型

A. Subsection

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FIG. 1 A placeholder figure with a linear gradient [4]

TABLE I. Parameters

Ion	Carbon $^{12}\mathrm{C}^{6+}$
Frequency	$f_{\mathrm{a}} = 1\sim\mathrm{GHz}$
Bandwidth	$\Delta f_1 = 0.01 f_{\mathrm{a}}$

transferre in voluptatem, ut postea variari voluptas distinguique possit, augeri amplificarique non possit. At etiam Athenis, ut e patre audiebam facete et urbane Stoicos irridente, statua est in quo a nobis philosophia defensa et collaudata est, cum id, quod maxime placeat, facere possimus, omnis voluptas assumenda est, omnis dolor repellendus. Temporibus autem quibusdam et.

壁垒击穿效应。**由于 AI 编码的应用**，IT 行业的人才更替周期已经剧变，好在行业整体需求量暂时并未增长过多，否则我将在五年内面临比现在和以往严重的多的学历歧视。实际上绞肉机已经开始了，好比地表空气的整体成分发生了不算微小的突变，它不会影响你今天的生活，却会改变千年后人类整体的生物特征。另一个会快速迎来剧变的行业是教育，我不知道其他行业的价值如何，但在此次生成式 AI 浪潮下，这两个行业的变化意义是显著的。熵增开始了

B. Subsection

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aeque doleamus animo, cum corpore dolemus, fieri tamen permagna accessio potest, si aliquod aeternum et infinitum impendere malum nobis opinemur. Quod idem licet transferre in voluptatem, ut postea variari voluptas distinguique possit, augeri amplificarique non possit. At etiam Athenis, ut e patre audiebam facete et urbane Stoicos irridente, statua est in quo a nobis philosophia defensa et collaudata est, cum id, quod maxime placeat, facere possimus, omnis voluptas assumenda est, omnis dolor repellendus. Temporibus autem quibusdam et.

三、 前端交互设计

The Typst ecosystem features a broad range of community driven packages to make writing papers with Typst even more convenient. These can be found by exploring the Typst Universe at https://typst.app/universe.

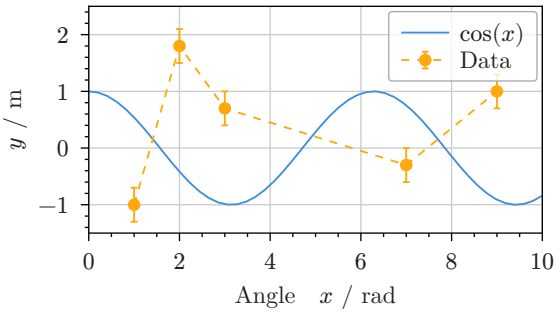

FIG. 3 A plot create with Lilaq.

A. Physical quantities

The **zero** package helps typesetting numbers and scientific quantities.

Using the custom show-rule above, quantities are nicely formatted including thin spaces between the number and unit like in 1.2 µm, digit grouping for $x = 0.123\,456\,78$ m, uncertain quantities like $f_{\text{rev}} = (325.2 \pm 0.1)$ kHz as well as tolerances such as $h = (8.3^{+0.1}_{-0.2}) \cdot 10^{-2}$ mm. For details refer to the documentation at https://typst.app/universe/package/zero.

B. Plots

With the **lilaq** package, plots can be create directly in the document, so you can skip the additional plotting step in your workflow while ensuring that all plot elements are properly sized. Fig. 3 gives an example and the full documentation is available at https://lilaq.org.

C. Abbreviations

The **glossy** package helps managing abbreviations, automatically using the long form on first use of American Physical Society (APS) and the short form on subsequent uses of APS. But it can do much more: A radio frequency (RF) device shows how capitalization is applied on sentence start, and in addition the article (a/an) is managed automatically, since it differs between the first and subsequent use of an RF device. In addition, explicit forms are supported as in radio frequency, RF and radio frequency (RF), and plural forms can be accessed like in RFs. For more details, refer to https://typst.app/universe/package/glossy.

四、 总结

致谢

感谢我的家人、老师和朋友

[1] S. Venkatraman 等, *Recursive Self-Aggregation Unlocks Deep Thinking in Large Language Models*, https://arxiv.org/abs/2509.26626.

[2] A. L. Zhang, T. Kraska, 和 O. Khattab, *Recursive Language Models*, https://arxiv.org/abs/2512.24601.

[3] K. Hong, A. Troynikov, 和 J. Huber, Context Rot: How Increasing Input Tokens Impacts LLM Performance, technical report, 2025, https://research.trychroma.com/context-rot.

[4] J. on Software, The Law of Leaky Abstractions, (2000).