

药学科普中提示词工程的应用与展望[△]

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摘要 **目的** 为构建药学科普中大语言模型的提示词工程体系,为药师群体开展高效、规范的科普工作提供参考。**方法** 系统阐述提示词工程的原理、类别及其对模型的输出“幻觉”、可解释性不足等问题的缓解作用。明确两大核心场景下(“文生文”和“文生图”)提示词工程的设计及优化,结合实例对比应用前后的输出效果,并指出现阶段提示词工程在药学科普领域应用的局限性。**结果** 在两大药学科普的应用场景下,合理的提示词工程能提高大语言模型输出的准确性、可读性及效率,生成适配临床应用场景的个性化科普内容。**结论** 提示词工程可优化药学科普的输出质量。本文构建的针对药学科普的规范化提示词工程模板,可提升药师开展科普创作的效率和质量。

关键词 人工智能;大语言模型;药学科普;提示词工程;人机协同

Applications and prospects of prompt engineering in pharmaceutical popularization

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ABSTRACT **OBJECTIVE** This study aims to establish a prompt engineering system for large language models in pharmaceutical popularization, and provide references for pharmacists to carry out efficient and standardized science popularization work. **METHODS** This study systematically expounded the principles and classifications of prompt engineering, as well as its effect on alleviating problems including model output hallucinations and poor interpretability. The design and optimization strategies of prompt engineering were defined for two core scenarios, namely text-to-text and text-to-image. Typical examples were adopted to compare the output effects before and after application. In addition, the limitations of prompt engineering applied in pharmaceutical popularization at the current stage were summarized. **RESULTS** In the two major scenarios of pharmaceutical popularization, well-designed prompt engineering improved the accuracy, readability and efficiency of outputs generated by large language models, and produced personalized popularization content adapted to clinical practice. **CONCLUSIONS** Prompt engineering can effectively improve the output quality of pharmaceutical popularization. The formulated standardized prompt engineering templates tailored for pharmaceutical popularization, can help pharmacists improve the efficiency and quality of popularization content creation.

KEYWORDS artificial intelligence; large language models; pharmaceutical popularization; prompt engineering; human-machine collaboration

随着《“健康中国2030”规划纲要》的深入实施,提升全民健康素养已成为医疗卫生事业的重要目标。近年来,国家相继出台了《全民科学素质行动规划纲要(2021-2035年)》《“十四五”国民健康规划》等医药卫生领域的政策文件,在提出“健康优先”的同时,还要求“建立健全全媒体健康科普发布机制”。2021年7月,人力资源社会保障部等印发的《关于深化卫生专业技术人员职称制度改革的指导意见》指出“科普作品可作为业绩

成果代表作参加评审”,明确了科普工作在卫生专业技术人员职业发展中的重要性。2025年中国居民健康素养监测情况数据显示,我国居民健康素养仍存在城乡人口差距、区域分布不均衡、人群差异等问题^[1]。且网络信息的发展使“伪科普”快速传播,降低了正规科普的可及性和可信度,威胁公众用药安全。国际药学联合会提出“药师是药物治疗安全的核心守护者”,要求药师从传统的药品供应转向以患者安全为核心的全程健康管理。因此,提供准确、及时、易懂的药学科普已成为新时代药师的重要职责^[2]。

近年来,大语言模型(large language models, LLMs)逐渐兴起,在医药学领域展现出广阔的应用潜力,为药学科普的提质增效提供了新的技术路径^[3-4]。目前,传

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