Effective Integration of Modern Artificial Intelligence Tools in Web Development

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The paper addresses the increasing relevance of AI-driven solutions for enhancing user experience and operational efficiency in web applications. The primary goal is to demonstrate how the thoughtful application of advanced AI models can transform standard web interactions into richer, more intuitive experiences. The study's objectives include designing an architecture that uses natural language processing both for semantic search and for dynamic content creation. The subject of the research is the FoodLabs application, which features a user-facing front-end and a robust back-end system.
Users interact exclusively with the front-end, utilizing two integrated AI models. For recipe search, the Qwen model turns users' natural language queries into ten contextually relevant keywords, which are then used to query a PostgreSQL database for matching recipes in titles, descriptions, or categories. For recipe generation, the DeepSeek model receives unconstrained, conversational input, even accommodating user-specific constraints like dietary preferences, to produce tailored recipes. Newly generated recipes are stored in the database and users are seamlessly redirected to the recipe details page. The main result is a streamlined, intelligent workflow that greatly enhances both the relevance and personalization of web interactions. The paper's novelty lies in the dual-AI integration for real-time, natural language-powered search and content generation within a modern web framework.

Literature

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