

**DEVELOPMENT OF AN AI-BASED PRODUCT REQUIREMENT
DOCUMENT GENERATOR USING LARGE LANGUAGE MODELS
(LLMs)**

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ABSTRACT

This study creates an artificial intelligence (AI) and large language model (LLM) driven product requirement document (PRD) generator. It develops DraftMind, a web-based tool that aids in the generation, review, management, and export of PRD drafts. This study is motivated by the complications posed by the preparation of PRDs, which are usually drafted manually. PRD preparation is a tedious and repetitive process that exhibits some lack of consistency and can lead to ambiguity and misinterpretation in various stages of requirements engineering. The primary goal of this project is to develop an LLM-based PRD generation system that allows users to create a draft of a structured PRD, a rich text editor to facilitate the iterative improvement of PRD content, PRD version management, PRD quality assessment, and PRD export in multiple formats. The system was developed by applying the Spiral Model and the Research and Development (R&D) approach on prototype construction and evaluation. The core functionalities of the system were implemented by the application of modern web technologies and a multi-provider AI integration. The system was evaluated based on functional testing, PRD generation by various defined scenarios, testing of the export capability, and some selected metrics of performance, coupled with a questionnaire involving 30 target users. From the results, the main functions of PRD generation, document editing, quality assessment, version control, sharing, and export in six defined formats were implemented successfully. The user evaluation exhibited a moderate acceptance

based on the defined scoring, which ranged from 3.04 to 3.15. From this study, it is shown that the integration of the LLMs in the PRD workflow helps to support structured and more reviewable drafts of requirement documents. It is evident from this survey that PRDs are in dire need of improvement in various dimensions of usability and user experience. The validation of the AI output is equally critical, and more improvement is needed.

Keywords: Product Requirement Document (PRD), Large Language Models (LLMs), Artificial Intelligence (AI), Requirements Engineering, Document Generation, Web-Based System.