УДК 004.413.2

SOFTWARE DESIGN PATTERNS SELECTION USING TEXT CLASSIFICATION APPROACH

Asaad J. (ITMO university)
Supervisor–Associate Professor, Avksentieva E. Yu.
(ITMO university)

Introduction. In the dynamic landscape of software development, the efficient design of software systems plays a pivotal role in ensuring reliability, scalability, and maintainability. Software design patterns serve as reusable solutions to common problems encountered during the development process, providing a structured approach to crafting robust and flexible software architectures. As the complexity of software projects continues to grow, selecting appropriate design patterns becomes a critical decision-making process [1].

Main Part. By Studying and analyzing relevant studies, we explore an innovative approach to software design pattern selection through the application of text classification techniques. Leveraging advancements in natural language processing and machine learning, this methodology aims to streamline the design pattern selection process by analyzing textual artifacts associated with software requirements, specifications, and design documents [2].
Traditionally, design pattern selection has relied on the expertise of experienced developers and architects, often based on intuition and past experiences. However, the text classification approach can be time-consuming and subjective. This approach seeks to augment human decision-making by automating the identification and recommendation of suitable design patterns based on the analysis of textual content [3].
Throughout this approach, we will delve into the rationale behind employing text classification for design pattern selection, exploring the benefits of automation, increased accuracy, and scalability. We will also discuss the key components of the proposed approach, including data preprocessing, feature extraction, and the utilization of machine learning algorithms.

Conclusion Our study aims to shed light on the utilization of text classification techniques to optimize the efficiency and effectiveness of software design pattern selection. To gauge the performance of our proposed approach, we will delve into key metrics including precision, recall, and F1-score. This quantitative analysis will not only validate the viability of our method but also offer a nuanced understanding of its strengths. Ultimately, our research endeavors to make a significant contribution to the development of more resilient and maintainable software systems, especially in the face of the dynamic changes within the technological landscape.

References:

1. . Narsoo, J. and Sunhaloo, S., 2022. AN OBJECT-ORIENTED FRAMEWORK USING DESIGN PATTERNS FOR NUMERICAL OPTION PRICING. Palestine Journal of Mathematics, 11(1).
2. Hussain, S., Keung, J. and Khan, A.A., 2017. Software design patterns classification and selection using text categorization approach. Applied soft computing, 58, pp.225-244.
3. Hasheminejad, S.M.H. and Jalili, S., 2009, December. Selecting proper security patterns using text classification. In 2009 International Conference on Computational Intelligence and Software Engineering (pp. 1-5). IEEE.