13th International Conference on Applied Informatics
Eszterházy Károly Catholic University
Eger, Hungary, February 19–21, 2026

Introducing TAIPO, an AI-Based Product Owner Assistant for Vibe Coding

Gábor Kusper[a], Judit Szabó[a], Márk Szabó[a], Ádám Kovács[a], Tibor Tajti[a], Csaba Szabó[b], Ján Perháč[b], Marek Horváth[b], Branislav Sobota[b]

[a]Eszterházy Károly Catholic University
{kusper.gabor,szabo.judit,szabo.mark,kovacs2.adam,tajti.tibor}@uni-eszterhazy.hu

[b]Technical University of Košice
{csaba.szabo,jan.perhac,marek.horvath,branislav.sobota}@tuke.sk

Abstract

Vibe coding has gained significant attention as an experience-driven programming approach in which developers rely on generative AI to maintain creative flow and achieve rapid progress [3]. While this approach can be highly effective for exploratory personal projects, transferring it into industrial or educational environments raises control and quality concerns. Empirical evidence shows that AI code assistants may recommend insecure solutions in realistic scenarios [4], and AI tools might memorize and reproduce training fragments, potentially including sensitive or strictly licensed content [7]. These risks imply fundamental questions: Can AI-generated code be trusted? How can intellectual property and data security be ensured? Is it acceptable to commercialize software largely produced by generative models? How robust is vibe coding when requirements change?

Motivated by these challenges, we launched a Slovak–Hungarian joint research project entitled *"Realistic Project Simulation and Intelligent Product Owner Assistant for Improving Software Engineering Education"*. The project builds on the publicly available TAWOS dataset [6], which contains over half a million agile issue-tracking records mined from open-source Jira projects, together with rich metadata such as change logs, comments, releases, and (where available) story points. Our project has completed a data cleaning and validation phase, resulting in a high-quality dataset suitable for realistic project simulation.

In real-world agile processes, a product owner (PO) plays a central role by

continuously mediating between stakeholders and the development team by shaping how requirements are clarified, prioritized, and adapted over time [2]. In this sense, the PO acts as both a knowledge hub and a decision-making authority throughout the development lifecycle.

This paper introduces **TAIPO** (**T**he **AI**-based **P**roduct **O**wner), an AI-supported product owner assistant designed to embed vibe coding into a structured Kanban-based workflow [1]. Unlike traditional AI assistants used in ephemeral chat interactions, TAIPO operates directly on a Kanban board: developers can query TAIPO using prompt-based questions, and the generated answers are persistently attached to the relevant Kanban cards. In this way, domain clarifications, design decisions, and requirement interpretations become part of the project state itself, supporting traceability as requirements evolve.

Note that TAIPO is pronounced like "typo". However, unlike a typo, which refers to a misspelled word, TAIPO is an AI-based product owner assistant for vibe coding.

Kanban cards form the operational context of TAIPO. They provide both the input for reasoning and the mutable artifacts on which TAIPO acts. The assistant can create new cards from textual requirements, such as requirement specification, edit descriptions, update priorities, decompose user stories into concrete tasks, and move cards across workflow stages. The backlog population capability aligns with emerging research on LLM-assisted user story generation from requirement documentation [5]. At the same time, TAIPO remains robust to external modifications: changes introduced by human users or other tools do not break the AI context but are naturally incorporated into subsequent reasoning steps.

The proposed system is implemented as a prototype using a PHP-based backend, a Kanban-style user interface, and a generative AI component integrated via the Gemini API. It is available at `https://github.com/szabojuci/AIKanban.git`. The current implementation supports automated population of the Product Backlog with prioritized user stories derived from requirements, as well as story-to-task decomposition. Acceptance decisions are partially supported and will be extended with AI-generated feedback, allowing rejected items to be annotated and returned to the backlog for refinement.

We argue that TAIPO demonstrates how vibe coding can be embedded into established agile methodologies in a safer and more auditable way. By injecting AI-driven creativity to familiar structures such as Kanban boards and product owner responsibilities, the approach enables controlled experimentation with vibe coding in software engineering education and practice.

In addition to interactive use, TAIPO is able to simulate PO activities. The frequencies of these simulated activities are configurable. By default, every 2 hours (from 8AM to 4PM on working days), TAIPO adds a comment to a card. These comments are generated using the TAWOS database and the context of the Kanban board. Less frequently (on average once every three days), TAIPO also generates new requirements, user stories, or change requests (CRs), which helps simulate real projects.

The goal is to support project-based courses in which a single instructor must fulfill the PO role for multiple student teams simultaneously. In this setting, TAIPO serves as a scalable PO assistant that reduces instructor workload while maintaining continuous feedback and guidance for each team.

We demonstrate TAIPO on a simulated project: a weather forecast webpage with a zoom-in / zoom-out style map, a time slider bar, and the introduction of unforeseen requirement changes.

Although TAIPO is able to generate source code based on the Kanban board context, this is not its main use. Instead, TAIPO serves as a vibe coding environment tool that emphasizes structure, traceability, and product owner–driven workflows.

Acknowledgment

This work was supported by the Slovak–Hungarian TéT project entitled "Realistic Project Simulation and Intelligent Product Owner Assistant for Improving Software Engineering Education" (Project ID: 2024-1.2.5-TÉT-2024-00072). This work was also supported by the Slovak Research and Development Agency under the Contract no. SK-HU-24-0037.

References

[1] M. O. Ahmad, J. Markkula, M. Oivo: *Kanban in Software Development: A Systematic Literature Review*, in: Proceedings of the 2013 39th Euromicro Conference on Software Engineering and Advanced Applications, 2013, pp. 9–16, DOI: 10.1109/SEAA.2013.28.

[2] M. D. Kadenic, D. A. de Jesus Pacheco, K. Koumaditis, G. Tjørnehøj, T. Tambo: *Investigating the role of Product Owner in Scrum teams: Differentiation between organisational and individual impacts and opportunities*, Journal of Systems and Software 206 (2023), pp. 1–17, DOI: 10.1016/j.jss.2023.111841.

[3] A. Karpathy: *Vibe Coding*, X (formerly Twitter) post, Feb. 2025, URL: https://x.com/karpathy/status/1886192184808149383 (visited on 01/14/2026).

[4] H. Pearce, B. Ahmad, B. Tan, B. Dolan-Gavitt, R. Karri: *Asleep at the Keyboard? Assessing the Security of GitHub Copilot's Code Contributions*, in: 2022 IEEE Symposium on Security and Privacy (SP), 2022, pp. 754–768, DOI: 10.1109/SP46214.2022.9833571.

[5] T. Rahman, Y. Zhu: *Automated User Story Generation with Test Case Specification Using Large Language Model*, 2024, DOI: 10.48550/arXiv.2404.01558, arXiv: 2404.01558 [cs.SE].

[6] V. Tawosi, A. Al-Subaihin, R. Moussa, F. Sarro: *A Versatile Dataset of Agile Open Source Software Projects*, in: Proceedings of the 19th International Conference on Mining Software Repositories (MSR '22), 2022, pp. 707–711, DOI: 10.1145/3524842.3528029.

[7] Z. Yang, Z. Zhao, C. Wang, J. Shi, D. Kim, D. Han, D. Lo: *Unveiling Memorization in Code Models*, in: Proceedings of the IEEE/ACM 46th International Conference on Software Engineering, 2024, pp. 1–13, DOI: 10.1145/3597503.3639074.