



The ACATAR—Turning Academic Success into a Fun Adventure (update 2025)

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Abstract. Since its inception in 2018, the ACATAR project has evolved into a pioneering initiative designed to enhance student engagement and motivation through gamification. Initially conceptualized at the FH des BFI Wien, ACATAR integrates 3D avatars into academic progression, allowing students to personalize their digital representations based on their achievements. With milestones reached in conceptual development, technical feasibility, and institutional integration, ACATAR now stands as an innovative tool bridging immersive learning environments with higher education. This extended abstract provides a concise history of the project's evolution and highlights its current status, emphasizing its potential to transform the student experience without highlighting implementation details (yet).

Keywords: Gamification, Academic Avatars, Higher Education, Immersive Learning, Student Engagement.

1 Introduction

The ACATAR project emerged from a need to increase student engagement in higher education through immersive and gamified learning experiences. Traditional educational environments often struggle to maintain student motivation, particularly in digital and remote learning contexts. Research has consistently shown that gamification techniques, when effectively implemented, can significantly enhance learning outcomes by making educational experiences more interactive and rewarding. By integrating a customizable academic avatar system into the curriculum, ACATAR fosters motivation and a sense of achievement, allowing students to visualize their progress in a dynamic and engaging manner.

The concept of digital avatars as a means of representation and progress tracking has been widely explored in the gaming industry and to some extent within higher education [1][2][3], and ACATAR leverages these principles to create a unique academic experience. Through personalized avatars, students receive tangible, incremental rewards that reflect their academic accomplishments, reinforcing positive behaviors such as active participation, timely submission of assignments, and collaboration in group projects. By connecting these achievements to real-time progression within an avatar-based system, students are provided with an added layer of motivation beyond traditional grading structures.

Moreover, ACATAR aligns with broader trends in digital transformation within higher education, including the integration of immersive learning environments, artificial intelligence-driven learning analytics, and personalized education pathways. Over the years, the project has undergone significant conceptual and technical advancements, positioning itself as an integral component of digital education strategies. As institutions continue to explore innovative approaches to student engagement, ACATAR serves as a model for the effective application of gamification in academic settings.

2 Project Background & Development

Originally envisioned as a means to visualize student progress interactively, ACATAR has expanded into a robust framework that integrates with existing Learning Management Systems (LMS) such as Moodle. Students unlock avatar customizations—ranging from apparel to accessories—through academic accomplishments, reinforcing a

positive feedback loop. The initiative has seen collaborative efforts spanning multiple cohorts of students, faculty, and industry partners.

As part of its development, ACATAR has incorporated elements of serious games and progress tracking, ensuring that the learning journey remains engaging and rewarding. The avatar system not only serves as a motivator but also enables a visual representation of academic growth, fostering a stronger connection between students and their educational achievements. Various iterations of the project have been tested, leading to refinements in user experience, scalability, and integration with institutional platforms.

To ensure broad accessibility and adoption, ACATAR has been designed with modularity in mind, allowing for flexibility across different educational contexts. Efforts have been made to align with best practices in educational technology, emphasizing ease of use for both students and faculty. Additionally, ACATAR has undergone continuous feedback cycles, incorporating insights from pilot studies to enhance its functionality and impact.



Fig. 1. Basic ACATAR model.



Fig. 2. ACATAR with clothing.

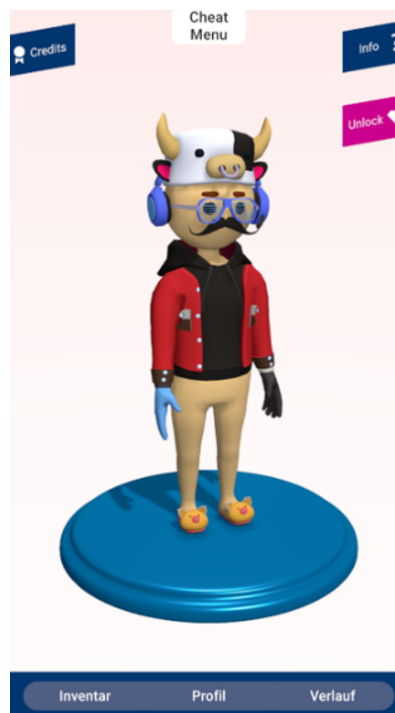


Fig. 3. ACATAR with items.

A key feature of ACATAR is its gamification-based progression system, which assigns points and rewards based on academic achievements and engagement. Students accumulate points for course completion, grades, and participation in activities such as quizzes and attendance. These points unlock avatar customization options and in-game items, fostering motivation through incremental progress. The system incorporates mechanics such as leaderboards, skill-based progression, and limited-time challenges to encourage ongoing participation. Additionally, ACATAR features interactive mini-games, including quiz-based competitions and knowledge challenges, reinforcing course material in an engaging format. This structured reward system enhances student retention and incentivizes active learning behaviors.

3 Current Status

As of 2025, ACATAR has reached an important stage in its deployment. Key developments include:

- The refinement of its technical infrastructure, ensuring seamless integration with institutional LMS.
- The enhancement of personalization features, supporting diverse student identities.
- The implementation of a sustainable 3D-printing model, enabling students to materialize their avatars upon graduation as a tangible memento of their academic journey.
- Expansion of ACATAR's gamification elements, including skill-based progression, community interaction, and adaptive learning modules tailored to individual student needs.

Furthermore, ACATAR is being positioned as a model project for immersive learning, with collaborations extending to interdisciplinary research on student motivation and engagement. Future iterations will explore AI-driven personalization, allowing avatars to reflect not only academic progress but also learning styles and preferences. The project aims to deepen its integration with virtual and augmented reality platforms, expanding the scope of interactive learning experiences.

4 Future Outlook

Looking forward, ACATAR aims to expand its application across multiple study programs and explore AI-driven adaptive learning mechanisms. Additionally, its alignment with gender mainstreaming and diversity considerations [4] ensures an inclusive and equitable learning experience, fostering an educational environment where all students feel represented and engaged.

Disclosure

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References

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