

# Summary of Text2AC: A Framework for Game-Ready 2D Agent Character(AC) Generation from Natural Language

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The paper introduces Text2AC, an innovative system that uses large language models (LLMs) and generative AI to automate the creation of 2D game characters. Text2AC offers a more flexible and user-friendly alternative to traditional methods. Text2AC allows users to create fully customizable characters by inputting natural language descriptions, covering not only appearance but also personality, background, and skills. This approach eliminates the complexity and artistic expertise typically required for character design, making the process more accessible to non-professional users. In the context of gaming, personalized character creation plays a significant role in enhancing player engagement. Players often identify closely with their in-game avatars. Previous methods are constrained by fixed templates and manual parameters, limiting creative freedom and making it difficult for players to create characters that align with their vision. Text2AC overcomes these limitations by allowing for the creation of unique 2D characters that can be used across different platforms and game engines, using skeletal animation for interactive behavior.

The methodology behind Text2AC consists of two key steps: first, natural language inputs are translated using LLMs into text prompts that guide the LLM in generating character images. Next, these images are converted into interactive game characters through skeletal animation techniques using software like Spine, allowing for smooth, controllable movements and behaviors. This process doesn't need any manual adjustments, significantly reducing the time and effort required for character creation and it also provides users with greater creative control.

A user study involving eight experienced gamers, was conducted to evaluate the system's effectiveness. Participants were asked to create characters using Text2AC and compare the experience to traditional methods. The results showed that Text2AC significantly reduced the time required to create characters, with an average completion time of three minutes. Participants reported that the system offered greater freedom in designing characters that met their expectations. Most participants praised the diversity of visual features, including clothing, hairstyles, and facial expressions. They were also satisfied with the system's ability to capture their input, a few noted that certain detailed traits were not perfectly reflected in the final character renderings.

Despite its advantages, Text2AC faces certain limitations. The system struggles with handling complex or highly specific user requests, particularly when creating complicated backgrounds or unique physical features. This limitation is due to the model's reliance on a narrow training dataset, which restricts its ability to generate more diverse outputs. The authors suggest that future work should focus on expanding the training data and refining the algorithms to improve the system's ability to handle rare or highly specific inputs. They also propose enhancing user customization options by introducing adjustable parameters, allowing for more detailed control over the final character design. Looking ahead, Text2AC has the potential for other applications beyond gaming, such as in social platforms or virtual environments, where users could create personalized avatars for digital interactions. The ability to generate characters using natural language input could change the way users express their identities in online spaces. This method offers a more immersive and personalized experience. Additionally, the system could be integrated into existing multiplayer games or virtual worlds, providing players with the tools to create unique, fully customized avatars that enhance their engagement and enjoyment.

In conclusion, Text2AC represents a significant advancement in game character creation, offering a more accessible and flexible method for designing 2D characters. By using LLMs and generative AI, the system streamlines the character creation process, allowing users to generate personalized avatars that reflect their individual preferences and identities. This innovation has the potential to revolutionize not only the gaming industry but also other digital spaces where character customization plays a critical role in user experience. Future work will focus on enhancing the system's capabilities, improving the precision of AI-generated outputs, and exploring new applications for personalized avatars in virtual environments and social platforms.