World Academy of Science, Engineering and Technology
International Journal of Computer and Information Engineering
Vol:18, No:10, 2024

Automation of AAA Game Development using AI and Procedural Generation

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Abstract : The goal of this project was to evaluate and document the capabilities and limitations of AI tools for empowering small teams to create high budget, high profile (AAA) 3D games typically developed by large studios. Two teams of novice game developers attempted to create two different games using AI and Unreal Engine 5.3. First, the teams evaluated 60 AI art, design, sound, and programming tools by considering their capability, ease of use, cost, and license restrictions. Then, the teams used a shortlist of 13 AI tools for game development. During this process, the following tools were found to be the most productive: (1) ChatGPT 4.0 for both game and narrative concepting and documentation; (2) Dall-E 3 and OpenArt for concept art; (3) Beatoven for music drafting; (4) Epic PCG for level design; and (5) ChatGPT 4.0 and Github Copilot for generating simple code and to complement human-made tutorials as an additional learning resource. While current generative AI may appear impressive at first glance, the assets they produce fall short of AAA industry standards. Generative AI tools are helpful when brainstorming ideas such as concept art and basic storylines, but they still cannot replace human input or creativity at this time. Regarding programming, AI can only effectively generate simple code and act as an additional learning resource. Thus, generative AI tools are at best tools to enhance developer productivity rather than as a system to replace developers.

Keywords : AAA games, AI, automation tools, game development
Conference Title : ICCIS 2024 : International Conference on Computer and Information Sciences
Conference Location : Paris, France
Conference Dates : October 28-29, 2024