Dungeon Coder

Custom 3D Assets and Promptable Terrains with Creative Control in Real-Time

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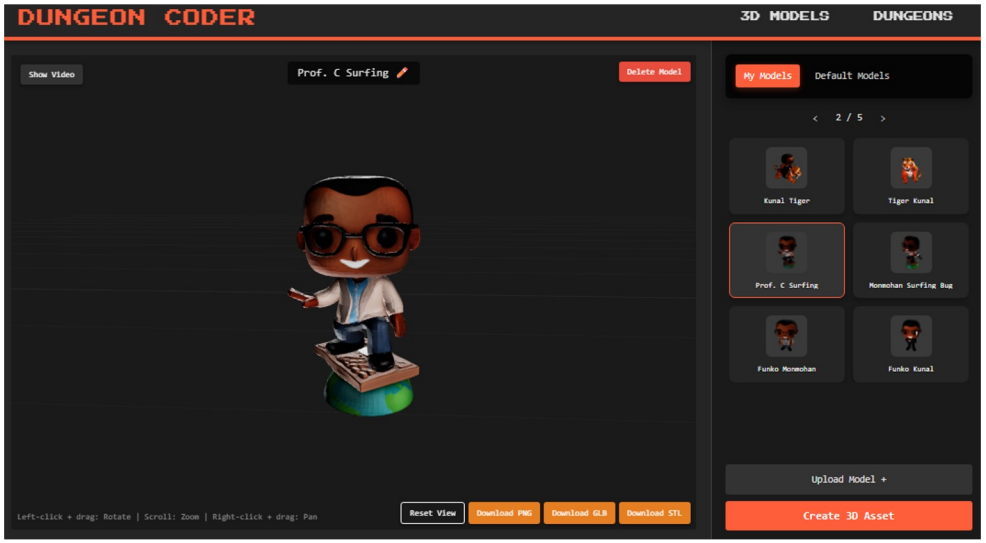
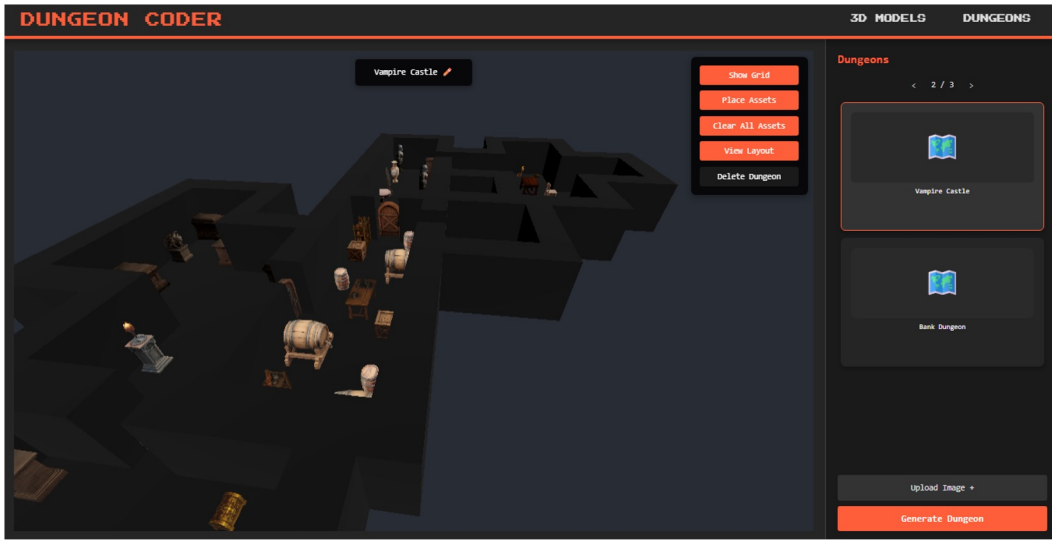
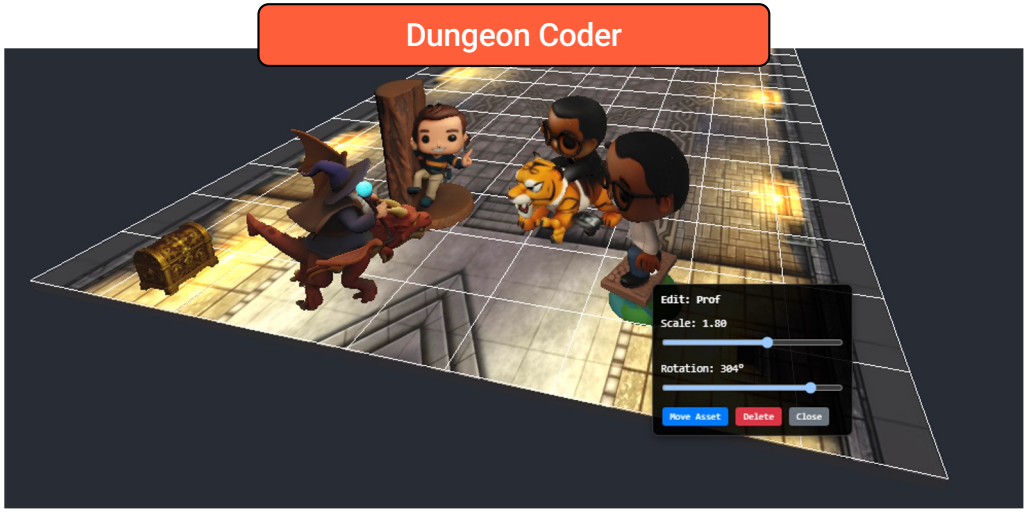




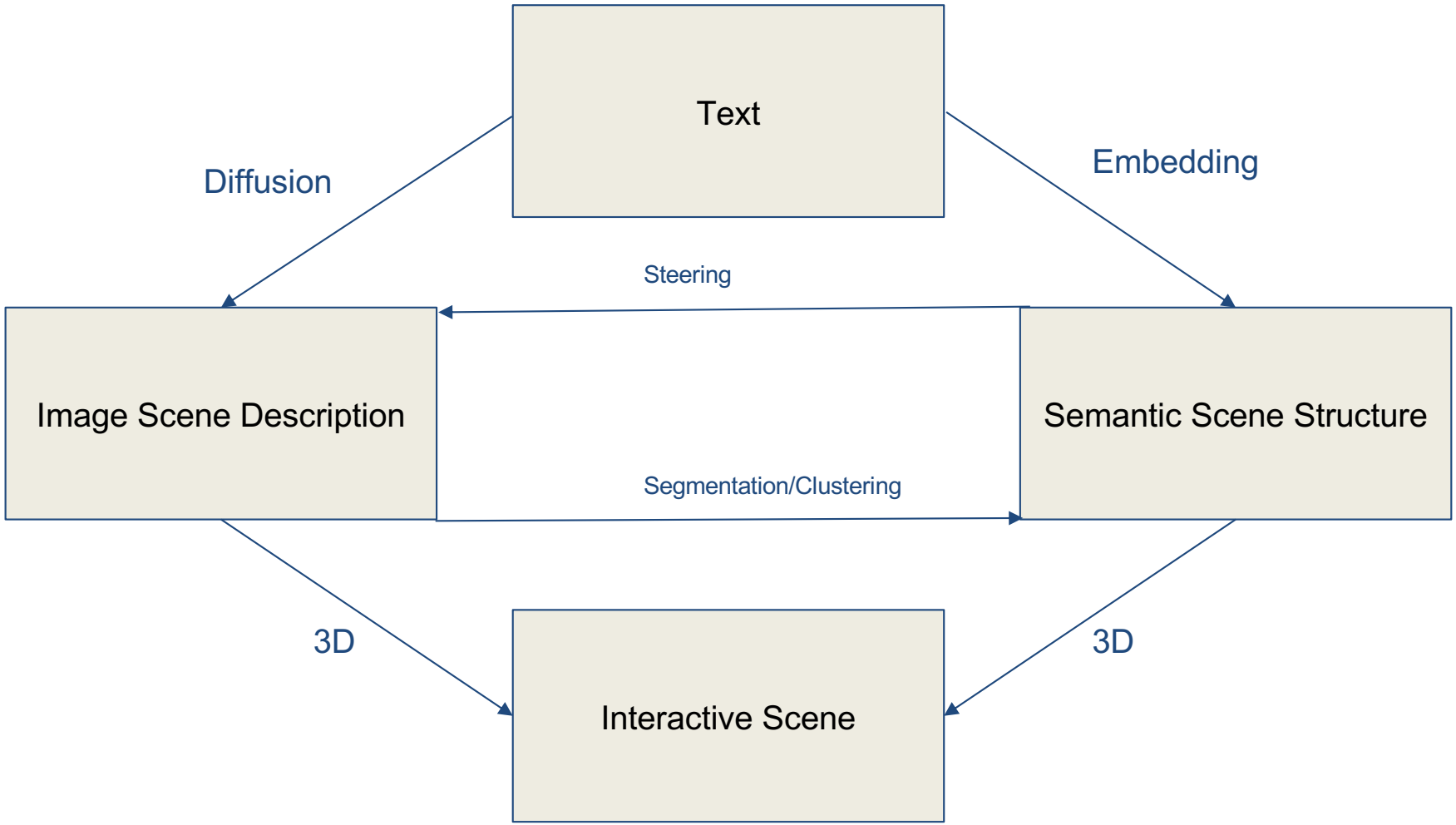
Question for the class:
What other applications could you see real-time high-quality 3D asset generation used in?

Motivation

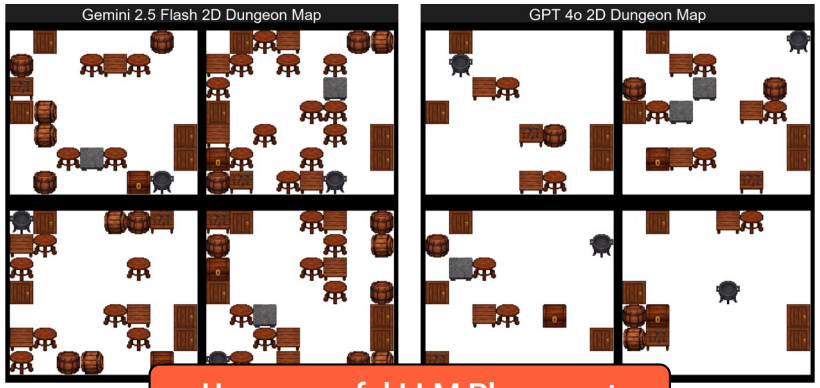


- Problem:
  - TTRPG market (~$1 B/yr) now expects cinematic 3D battlemaps
  - Existing engines (e.g., Inkarnate) require labor-intensive workflows
  - No all-in-one tool for dungeon building available yet
- Goals:
  - Real-time pipeline: full dungeon ≤ 60 s end-to-end.
  - Natural language builder-grade control: edit any room, asset, material, etc
  - Cohesive style across multi-room layouts, even under wild prompts

Key Challenge

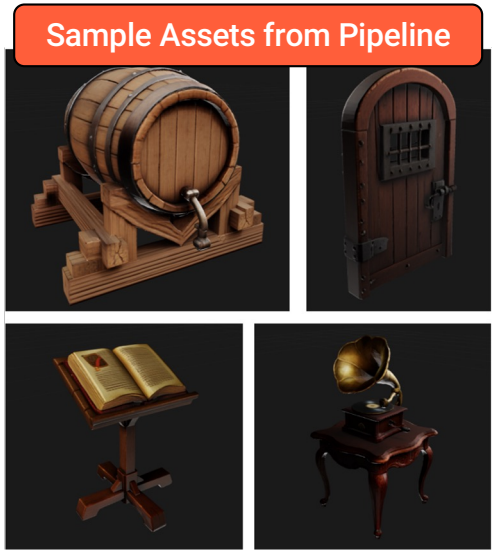


Unique Perspective



Unsuccessful LLM Placement

Successful LLM Placement



- **Architecture**: Modular pipeline → text/image diffusion → TRELLIS (image→3D) → LLM agent placement → Three.js render.
- **Objective**: Maximum steerability with < 1 minute turnaround.
- **Training / tuning**: Custom TRELLIS endpoint on L40S GPU; few-shot prompts for asset placement (Claude 4 Sonnet).
- **Theory insight**: Hierarchical prompting enforces global scene consistency while keeping per-room diversity.

Amazing Results!

- **3D Asset Generation**: Idea → Image → 3D Asset in <60s. Creative control
- **Dungeon Generation**: Generate dungeon from scratch using procedural + LLM agent framework (<2 mins) – user-promptable and consistent
- 100+ high-fidelity default asset library (made in-app). Interesting dungeon generations. All steerable and real-time
- Smooth WebGL interaction on consumer laptops (LOD + lighting optim)