AGENTIC AI FOR 3D MODEL PROTOTYPING

JOYERO

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CONTEXT AND OBJECTIVE

“Designing custom jewelry is a slow and manual process. Designers use tools like Rhino or Blender to create digital 3D models from scratch before they can be 3D-printed and cast into final pieces. This iterative workflow slows down creativity, limits personalization, and increases production costs.”

OBJECTIVE

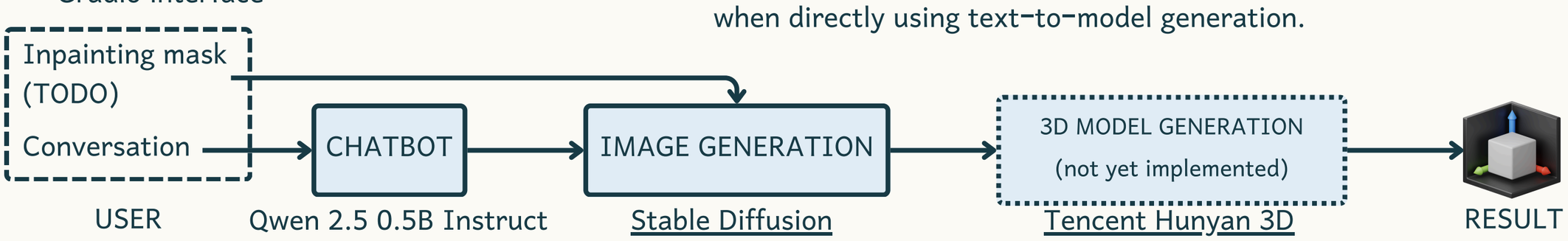
The goal is to provide users with a natural way to prototype and iterate, using natural language – which allow for voice extension – and live preview.
Users should prototype like they would be doing with other humans: simply, naturally, interactively. The platform should be easy to use.

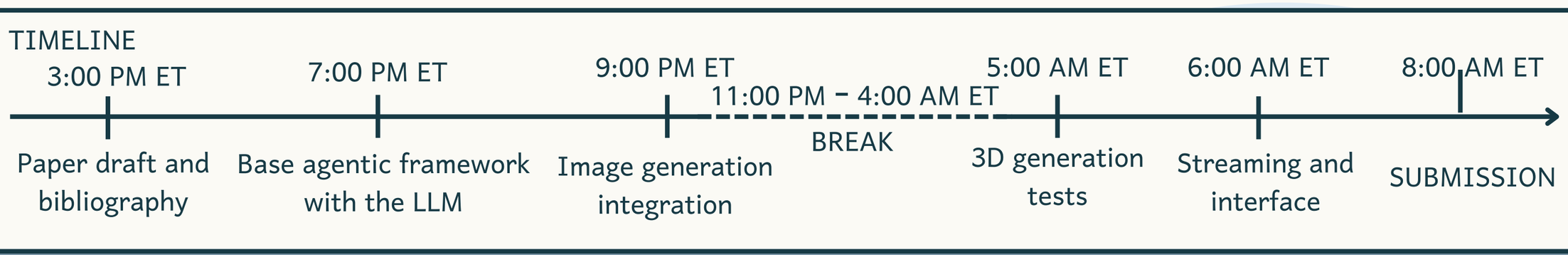
TOOLS

- HuggingFace Transformers ans Diffusers
- LangGraph
- Gradio interface

ARCHITECTURE

An agent structure uses a LLM for natural conversations, like if the user was prototyping with its colleagues. Later, an intermediary image is used to construct 3D models, as performances are lower when directly using text-to-model generation.





SUCCESSES

- A model that can call the generation tool
- The framework to scale and use larger models with a proper infrastructure
- A simple interface to stream the conversation

CHALLENGES

- Low compute capabilities: slow model downloading and running
- Unavailable fine-tuning for the same reasons: could have improved the relevance of the agent
- Use of small models: low precision, hallucinations and inconsistent format for tool use