

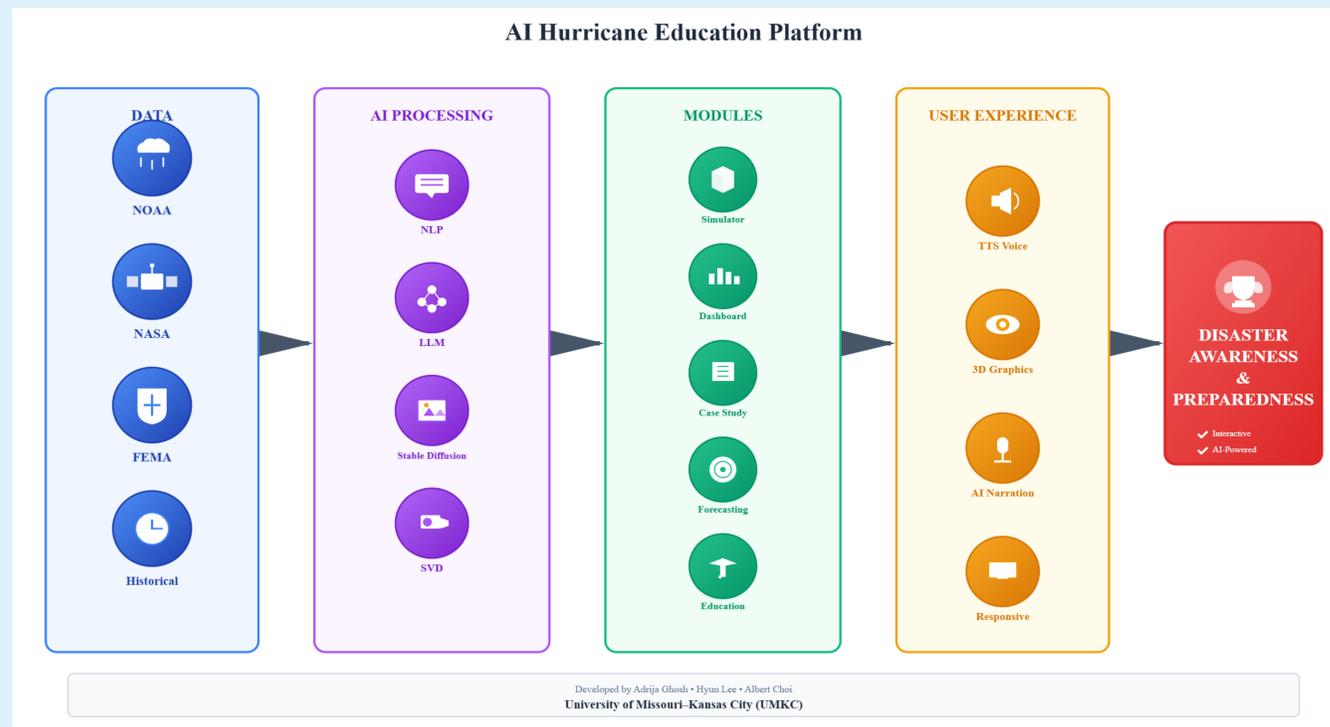
INTRODUCTION / ABSTRACT

An AI-driven platform uses NOAA, FEMA, and NASA data to create interactive 3D simulations of disasters like Hurricane Irma, combining real-time imagery, narration, and Graph-RAG reasoning to enhance public education and disaster preparedness.

OBJECTIVES

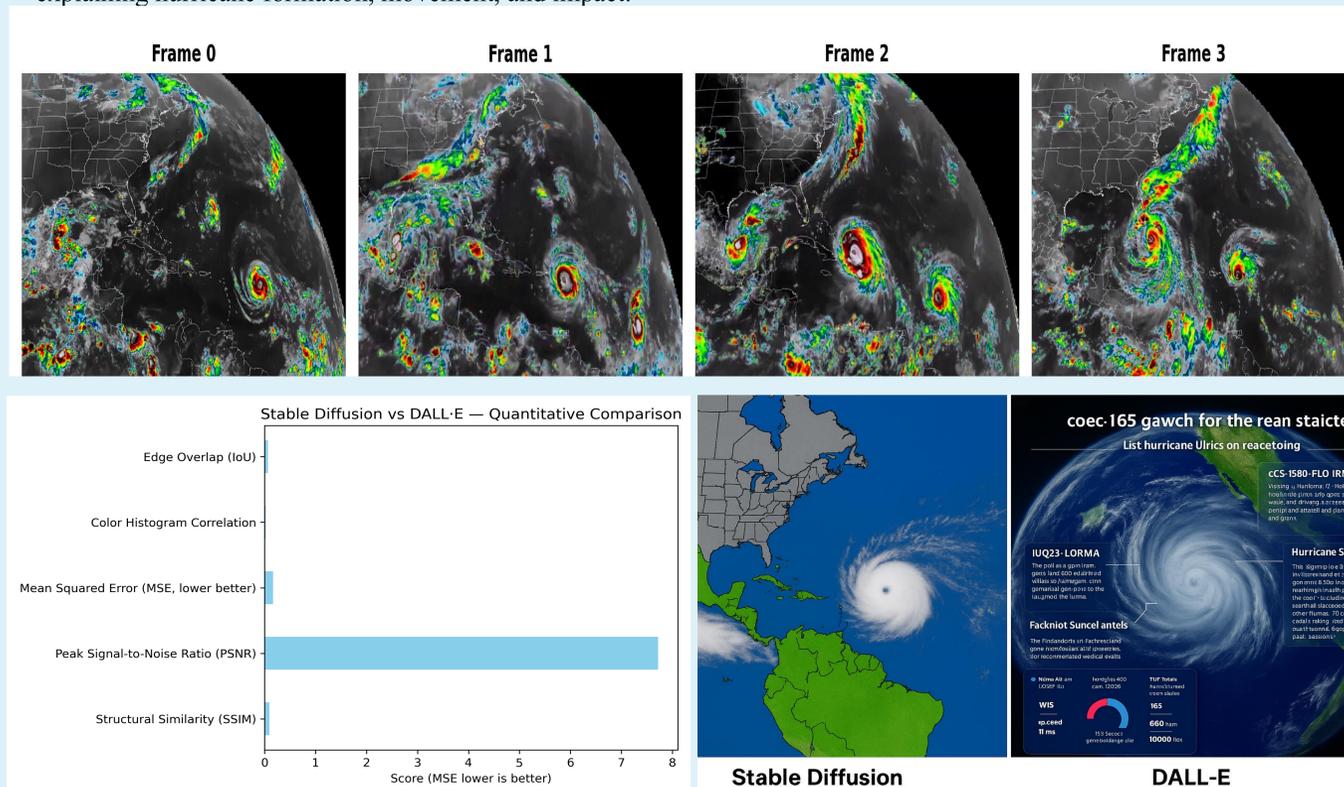
An AI-powered educational platform that uses real-time NOAA, NASA, and FEMA data to create 3D hurricane simulations with narration, TTS accessibility, and forecasting capabilities. It integrates AI, NLP, and advanced visualization tools like Stable Diffusion, ControlNet, and SVD to enhance disaster awareness, learning, and predictive preparedness.

MATERIALS & METHODS



RESULTS

The system uses LoRA-tuned Stable Diffusion and SVD models to generate realistic hurricane visuals from scientific and public data. These scenes, combined with AI voice narration, create immersive 3D educational videos explaining hurricane formation, movement, and impact.



CONCLUSIONS

An AI-driven 3D video platform that uses Stable Diffusion, ControlNet, and SVD with NOAA, FEMA, and NASA data to create realistic, explainable hurricane simulations. Built on a Neo4j Graph-RAG framework achieving 94% retrieval accuracy, it integrates live imagery, narration, and an upcoming LLM forecasting agent, providing an interactive, adaptable tool for global disaster education and preparedness.

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FUTURE DIRECTION/NEXT STEP

Future work will refine visuals, add multilingual narration, enhance live NOAA/NASA data, and introduce an LLM-based forecasting agent for predictive, scalable disaster visualization.

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