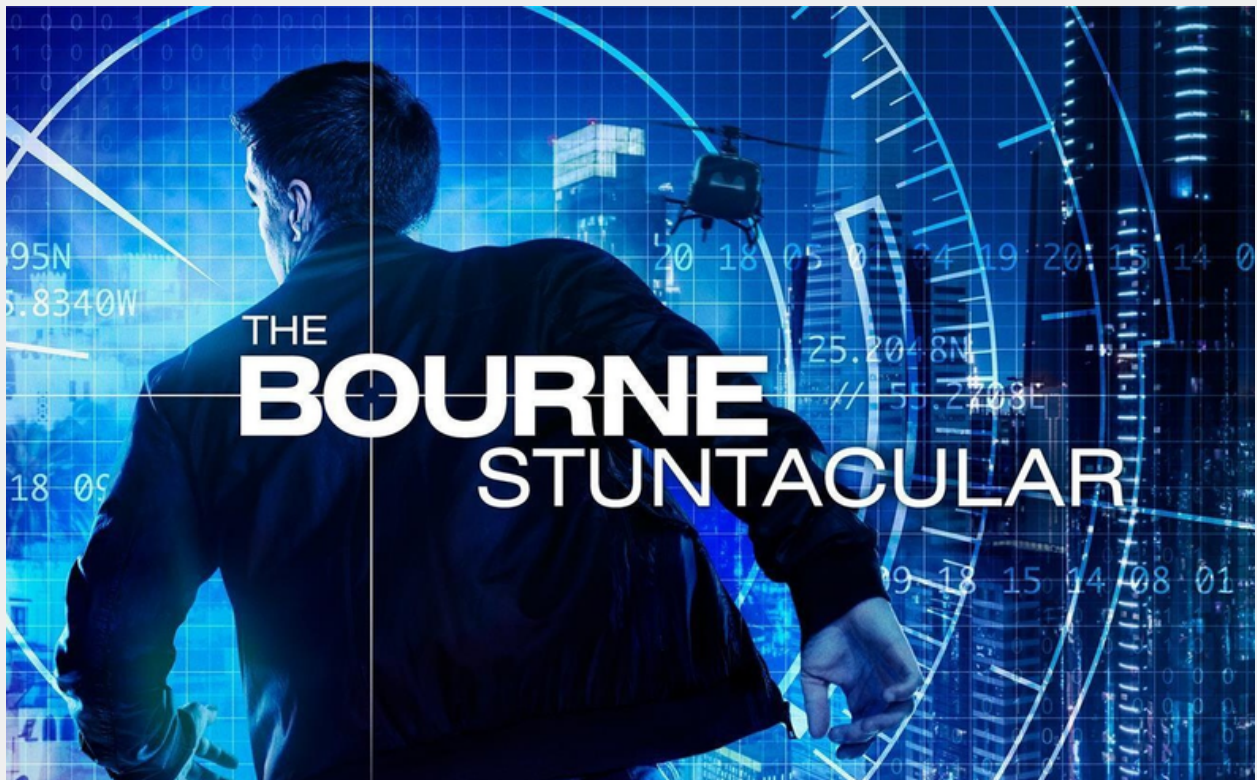


**DG8010 - Game Development - W2023**

**RESEARCH OUTPUT #1**

**THE BOURNE  
STUNTACULAR**

A case study of Unreal Engine being  
used in curating live entertainment



Instructor: Dr. Kris Alexander  
Student: Kathy Zhu  
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Image 1: stage layout

## GENERAL DESCRIPTION

- 20-minute stage-based stunt show based on the Jason Bourne series
- Opened at Universal Studios, FL, in 2020
- Produced by visual effects company **Cinesite**
- A **8.5 m tall, 40 m wide** curved screen displays visuals generated by Unreal Engine
- Physical props are placed in front of the screen for actors to interact with
- Synchronization of digital imagery and physical components makes it difficult to distinguish between real and virtual



Image 2: detectors attached to set pieces connect with cables under the stage, allowing them to move along their programmed paths.

## PROCEDURE

- Images delivered at 9K resolution, at a minimum of **60 frames per second**
- Set pieces move and "communicate" with each other through radio frequency emissions (image 2)
- Requires precise timing to coordinate stunts choreography with digital backdrop and props movements

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*"[It's] the blending of technology with a live-action show that I know the audience is gonna love, and they're gonna be at the edge of their seats the entire time."*

TRAVIS VOISARD, STUNTMAN

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## UE APPLICATION

- Real-time rendering of scenes
- **90 seconds** per frame; reduces production time significantly from traditional means
- Allows camera movements, animations & layout adjustments throughout the production process, avoiding
- Texture references, HDRIs and panoramas of scenes captured by drones and DSLR cameras are stitched together into a virtual landscape



Image 3: actors perform in front of a realistic, dynamic digital backdrop

## INDUSTRY TRENDS

- **Real-time VFX** is bringing new visual possibilities into live entertainment
- Storytelling is being augmented by the newest technologies
- Theme parks and attractions are creating more **immersive, interactive digital experiences**

### What do industry experts say?



**SALVADOR ZALVIDEA**  
VFX Supervisor, Cinesite

- Film VFX skills are highly transferable to onscreen theme park attractions
- **Digital tools** like UE are essential to the future of entertainment
- Remote design work is becoming common practice in the industry



**DAVID ANDRADE**  
CEO, Theory Studios

- Attractions industry is more flexible than film & tv
- **Higher profit margin** (>30% as opposed to 5-10% in film and tv productions)



**JALIL SADOOL**  
Co-Founder, Steamroller Studios

- Visual side of attractions must be improved to boost user experience
- Theme parks are incorporating more **game design concepts** into attractions



# COMPETITOR ANALYSIS

- First to combine real-life stunt action with **virtual 4D effects**; unprecedented in the industry
- Difficult to achieve the synchronization of human actions and digital imagery
- Utilizing tools and skills commonly used in the film industry

## Similar Projects



### The Weather Channel

Mixed reality images that display weather situations in real-time



### Karate Combat

Real-time rendering of virtual environments



### Beijing 2022 Winter Olympics

Projections and imagery on stage corresponds to performers' actions

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