EML4551-2

Team 522: Tactile Virtual Camera Controller for Film Production
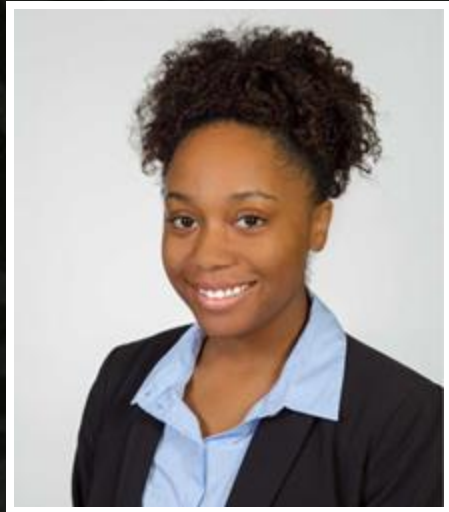
Design Review #5

Weston Dudley
Kayla Miller
Keishon Smith
Kyle Suarez
Daniella Turbessi

FAMU-FSU Engineering

MECHANICAL **ENGINEERING**

Team Introductions

Weston Dudley | ME Manufacturing Engineer

Kayla Miller | ME Mechanical Design Engineer

Keishon Smith | EE DevOps Engineer

Kyle Suarez | CpE Software Engineer

Daniella Turbessi | CpE Software Engineer

Stakeholders

FAMU-FSU College of Engineering

FLORIDA STATE UNIVERSITY
COLLEGE OF MOTION PICTURE ARTS

Dr. Shayne McConomy
Professor | Advisor

Dr. Jerris Hooker
Professor

Tom Mikota
Sponsor

Dr. Michael Devine
Sponsor

Kayla Miller

Project Objective

The **objective** of this project is to design a user-friendly virtual camera controller that can seamlessly couple the user to a virtual free space.

Kayla Miller

Past Work: Customer Needs

✓ User friendly for industries of education in film

✓ Adaptive to different filming styles

✓ Adaptable and usable features that are essential to film

✓ Low latency between device and movement within 3D space

✓ Adaptable to feature integration

✓ Designed for professional use

Kayla Miller

FAMU-FSU Engineering

MECHANICAL **ENGINEERING**

Past Work:
Targets and Selected Concept

Mobility
Easy to hold, weight

Visual Accuracy
Positioning, motion sense

Functionality
Record, camera placement, lens control, playback

Intuitive
Cinematographers, educators, animators

Latency
Reaction time, network strength

Selected Concept

Keishon Smith

FAMU-FSU Engineering

MECHANICAL **ENGINEERING**

Validation

Mobility:
8 pounds
Accuracy:
1 to 1 Reaction Rate
Intuitive:
Max 1 hour to master
Latency:
Negligible Time Delay

Functionality:
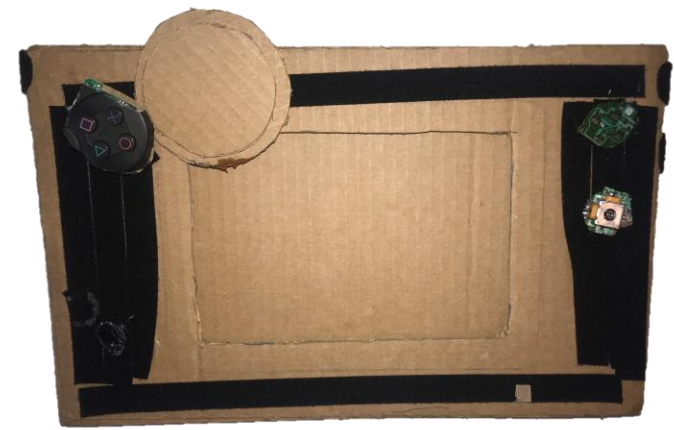MVP Functions
- Record
- Lens
- Focus
- Movement
- Camera Placement

Keishon Smith

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MECHANICAL **ENGINEERING**

Prototyping

01 Cardboard Layout

02 3D Printed Frame

03 Module Ergonomics

Kayla Miller

Mechanical Work

Kayla Miller

FAMU-FSU Engineering

MECHANICAL **ENGINEERING**

Software Background

Unreal Engine 4 (UE4)

🎮 Game Engine
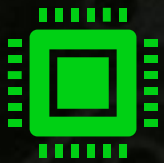
▣ Multi-use platform

📁 Software Plug In

Kyle Suarez

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MECHANICAL **ENGINEERING**
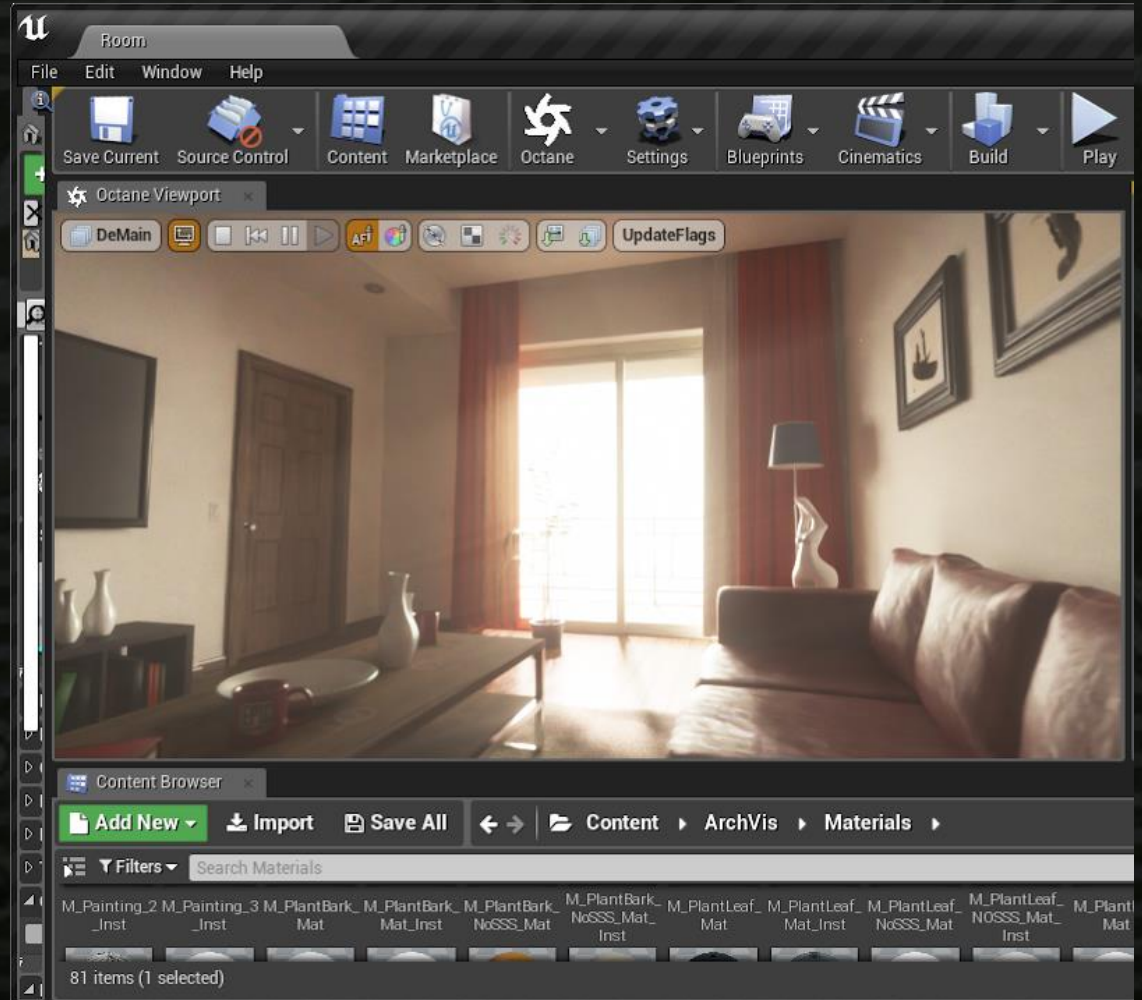
Software Work

Connection with Unreal Engine

Unreal Engine connection with iPad (virtual camera plugin), source code access

Plugin Software Functions

Camera snapshot
Focal length and distance
Aperture

User Interface Changes

Changes to the virtual camera plugin user interface, focus on necessary camera functions to create a more viable tool

Kyle Suarez

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MECHANICAL **ENGINEERING**

Current User Interface

Control View

Lens

Focus Distance and Aperture

Z axis control

X-Y axis control

Record and Snapshot

Waypoint function

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MECHANICAL **ENGINEERING**

New User Interface

Control View

Aperture

Lens

X-Y Axis
Control

Z Axis Control

Change Camera

Create New
Camera

Record

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MECHANICAL **ENGINEERING**

Budget

✓ Our budget is $1K

✓ Our sponsor has purchased: $30 spent

UE4 scene assets

Bluetooth Gaming controller

✓ We have and plan on purchasing: $150 spent $225 planned

UE4 character assets

Electronic Components

Keishon Smith

MECHANICAL **ENGINEERING**

Future Work

Mechanical
- Final layout and design
- Final purchases

Software
- UI layout and testing
- Final implementation of UI design

Feature Integration
- Microcontroller
- Wiring
- Testing

Competitions
- InNOLEvation Finalist Presentation (3/6)
- Launch Your Venture Semifinals
- e-Fest Competition

Keishon Smith

Questions?