

### Flex-Beam :

A Versatile Video Projection Interface for Digital Performance

### Abstract

We present *Flex-Beam*: a novel projection system designed to enhance and simplify the process of creating projections for digital performances. This system features a motorized reflector which moves the projection image as being mounted on a projector and a mobile application to control the system easily without complex interfaces. The result shows *Flex-Beam* as an easy-to-use and affordable alternative for digital performances can cover the wide display area with only a projector and create a moving stage lighting/scene regardless of the configuration of a theatre space.

### Keywords

Projection system; projector: digital performance;

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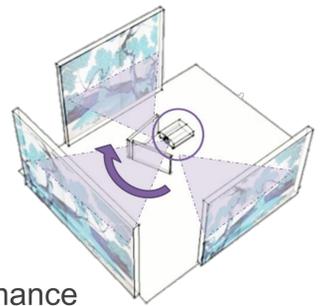


## Flex-Beam: Versatile Projection System

### Background

The emergence of digital performance: use of media projection for visual effect  
A Shift from conventional theater stages to public spaces

1. **Installation of an additional projector** is needed to cover the multiple areas of stage
2. **Re-location of projection** is required not to interrupt performer's movements and set pieces

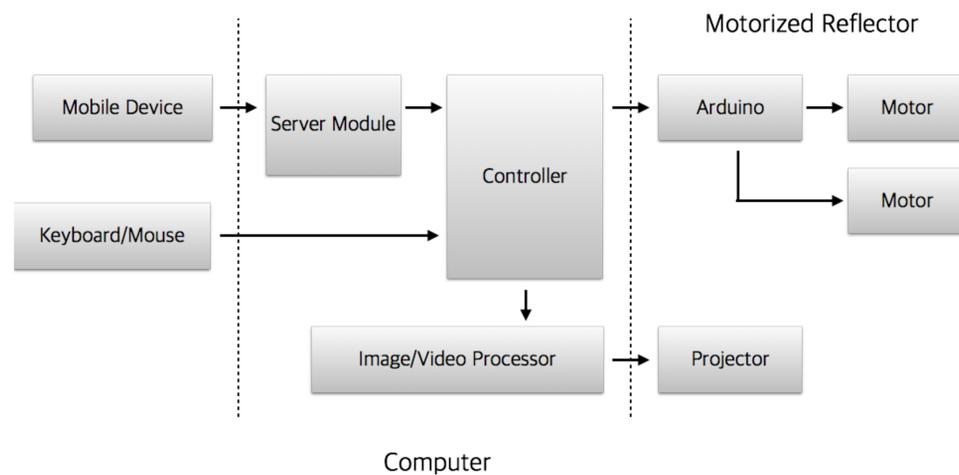
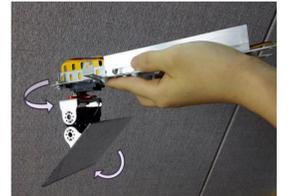


\*A versatile and affordable projection system required for digital performance

### Design & Implementation

Simple and easy-to-use projection system by the following features:

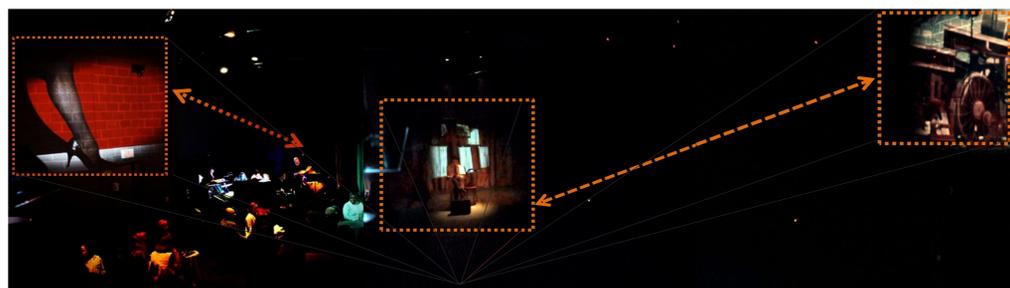
1. **Simple physical unit, a rotatable reflector** with two motors attached on any projector (affordable and mobile)
2. **Mobile application** intuitive interaction for moving projection (easy-to-use)
3. **Server module** via Wi-Fi - between the unit and mobile device without complex interfaces (affordable and easy-to-install)



### Evaluation

1. **Control of the projection position to create visual effects for scenes**

• Three different positions using one projector in the musical, *Cabaret*



2. **Utilization as dynamic stage lighting**

• Function as stage moving illumination on a performer



3. **Creation of a real-time interactive image in motion**

• Interactive 'the moon' motion effect using the plain image

