

Spring 5-2-2018

# Designing Smart Applications Using AR (Augmented Reality)

Kimberly A. De La Santa  
*CUNY New York City College of Technology*

## How does access to this work benefit you? Let us know!

Follow this and additional works at: [https://academicworks.cuny.edu/ny\\_pubs](https://academicworks.cuny.edu/ny_pubs)

 Part of the [Graphics and Human Computer Interfaces Commons](#), [Programming Languages and Compilers Commons](#), and the [Science and Technology Studies Commons](#)

---

### Recommended Citation

De La Santa, Kimberly A., "Designing Smart Applications Using AR (Augmented Reality)" (2018). *CUNY Academic Works*.  
[https://academicworks.cuny.edu/ny\\_pubs/250](https://academicworks.cuny.edu/ny_pubs/250)

This Poster is brought to you for free and open access by the New York City College of Technology at CUNY Academic Works. It has been accepted for inclusion in Publications and Research by an authorized administrator of CUNY Academic Works. For more information, please contact [AcademicWorks@cuny.edu](mailto:AcademicWorks@cuny.edu).



# DESIGNING SMART APPLICATIONS USING AUGMENTED REALITY

Kimberly De La Santa (Student), Professor S. Marco Pinto (Mentor)  
Department of Computer Systems

## ABSTRACT:

Augmented Reality is rapidly developing in popularity because it brings elements of the virtual world and also, into our real world. Augmented Reality (AR) is a variation of Virtual Reality (VR). VR technologies immerses the user inside of an imaginary environment. While immersed, the user cannot see the real world around them. In contrast, AR allows the user to see the real world, with virtual objects with information combined.

Therefore, AR supplements reality and enhances the things we see, hear, and feel.

## GOAL:

- To implement a application that gives the user the opportunity to experiment with AR.
- Explore alternative AR methods:
  - Graphics, audio, and other sensory enhancements from computer screen into real time environments
  - Combining virtual reality and the user's reality together.
  - Using rendering and calibration methods



## APPLICATION:

Image recognition is an crucial component of AR. The application that I created was a marker based AR application. It is able to determine the position of a camera and applies a marking tracking technique. This allows my three-dimensional skeleton model, to pinpoint optical squares/markers and adjust their orientation to the camera.

These squares/markers are encoded with an ID which displays the skeleton model onto the physical world model seamlessly and accurately.

For the coding part of this project, I used C#. I wanted to make my skeleton model to walk around the marker so I added a joystick to allow the user to move the virtual object around.

## Here is the script for the joystick:

```
1 using System.Collections;
2 using System.Collections.Generic;
3 using UnityEngine;
4 using UnityStandardAssets.CrossPlatformInput;
5 using UnityEngine.UI;
6
7 public class SkeletonpController : MonoBehaviour {
8
9     private Animation anim;
10    private Rigidbody rb;
11
12    // Starts the AR application
13    void Start () {
14        anim = GetComponent<Animation> ();
15        rb = GetComponent<Rigidbody> ();
16    }
17    // Update is called once per frame
18    void Update () {
19
20        float x = CrossPlatformInputManager.GetAxis ("Horizontal");
21        float y = CrossPlatformInputManager.GetAxis ("Vertical");
22
23        //transform.position += new Vector3(0,0,y/10);
24        //transform.position += new Vector3(x/10,0,0);
25
26        Vector3 movement = new Vector3 (x, 0.0f, y);
27
28        //The skeleton's speed
29        rb.velocity = movement * 4f;
30
31        if (x != 0 && y != 0) {
32            transform.eulerAngles = new Vector3 (transform.eulerAngles.x,
33            Mathf.Atan2 (x, y) * Mathf.Rad2Deg, transform.eulerAngles.z);
34        }
35        //if the joystick is not moved, the skeleton will stay idle.
36        //If moved, the skeleton will walk the direction desired
37
38        if (x != 0 || y != 0) {
39            anim.Play ("walk");
40        } else {
41            anim.Play ("idle");
42        }
43    }
44 }
```

## CONCLUSION:

Augmented Reality can allow us to interact with the real objects digitally. This system of technology has reached its goals half way and in no time, with powerful displays and tracking approaches, our world can become fully virtualized and we can experience this "new" technology in our everyday lives.