

# Webcam based games

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# Webcam based games

**WHAT**

**Introduction, what are  
WebCam based games**

**HOW**

**Implementation details,  
how does it work**

**WHEN**

**Tips from practice,  
when to use**

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Tips from practice,  
when to use

WebCam based games are unique,  
because you can:

**Control your game  
without  
keyboard or mouse**

Instead: using movement, special objects  
or other visual techniques

# DEMO

Replacing traditional input devices

- Click on flying object
- Buttons-like interactive areas
- Scrollbars-like interactive areas



# DEMO

Results of interaction

- Draw on top of camera view
- Manipulate WebCam output
- Change external visualisation



**WHAT**

**WebCam as motion input  
device**

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```
#include <opencv/cv.h>
```

```
frame = cvQueryFrame(capture);
```

**Based on computer vision library**



# OpenCV

```
for(int x = 0; x < frame->width; x+=step) {  
    for(int y = 0; y < frame->height; y+=step) {  
        differences[x + y*frame->width] =  
            abs(CV_R(frame, x, y) - CV_R(oldFrame, x, y)) +  
            abs(CV_G(frame, x, y) - CV_G(oldFrame, x, y)) +  
            abs(CV_B(frame, x, y) - CV_B(oldFrame, x, y));  
    }  
}
```

# DEMO

## Debugging camera data

- **Analysing current frame**
- **Comparing 2 frames**
- **Comparing history of input data**



# Precision and noise

It is all about the light

- Recognising color/shape vs changes
- Low light, white balance, shadows

**WHAT**

WebCam as motion input device

**HOW**

OpenCV for retrieval and analysis of each frame

**WHEN**

Tips from practice, when to use

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# Webcam not mainstream

- Fun to learn OpenCV via games but...
- Versus: Kinect, wii, PS move
- Responsive in all environments



# Controlled environment

- **Example: Advertise in a conference**
- **Close to light source, solid background**
- **Visuals/games specific to the audience**

# It is still the game

- **Make it fun: scores, challenges, levels...**
- **Guide the player: intro video, reminders**
- **Balance: Usable vs unique**

**WHAT**

WebCam as motion input device

**HOW**

OpenCV for retrieval and analysis of each frame

**WHEN**

Own the light, keep it fun, use as advertisement

# Webcam based games

Fork and use it in your community

# Questions?

## Webcam

## based games

Aurelijus Banelis



# References

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