

# Rock Your Page

A Chrome Extension Makes Your Webpage More Controlled

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# Rock Your Page: Motivation

How do we get the final product idea?

Start Point:

- ▶ Screen of Laptop  
⇒ smaller
- ▶ Font of web pages  
sometimes not  
suitable

Change size of web  
pages automatically

One Step Further

- ▶ Given a webpage,  
what can we do  
about it?

map several webpages  
into one, for easily  
browsing

Final Idea:

- ▶ two tools
- ▶ one small game



# Rock Your Page: Features Overview

## Three Components:

- ▶ Page Sizer: adjust size of contents in web pages based on distance between your face and screen automatically.
- ▶ Page Rotater: map your 2D web page into 3D scene, multiple pages projection is also supported.
- ▶ Page Rocker: a small game which let your web page dance with music.



Figure : Overview of Components



# Rock Your Page: Prototype

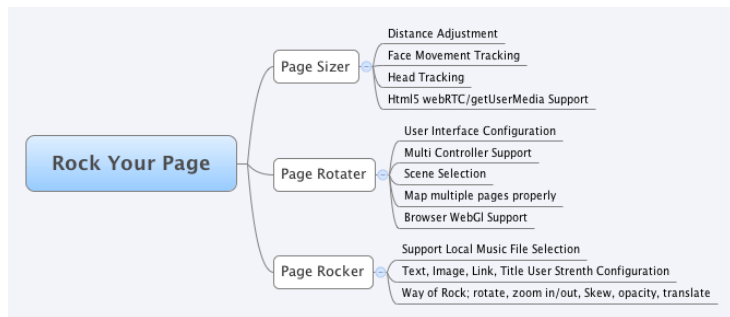
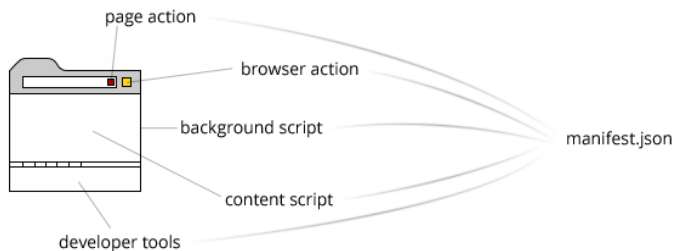


Figure : Prototype Design



## Technical Overview: Chrome Extension Development



### Figure : Architecture of Chrome Extension



# Technical Details: Page Sizer

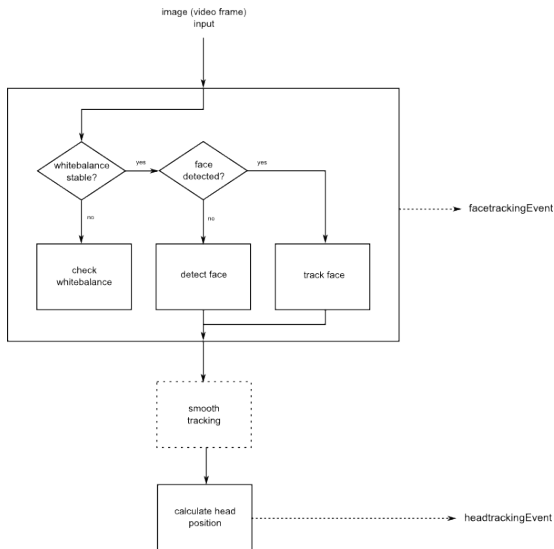


Figure : Face Detection in JavaScript



# Technical Details: Page Sizer

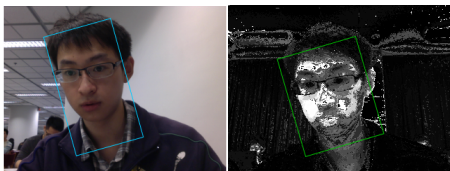


Figure : Realtime Face Detection Using Web Camera(*libccv*)

Which element in web page should be sized?

- ▶ p,a,h1,h2,h3,h4,h5,h6,code,span,img,pre

How should we determine the zoom amp?

$$\text{zoom\_value} = (\text{face\_init\_width} / \text{video\_init\_width}) / (\text{face\_width} / \text{video\_width})$$



# Technical Details: Page Rotater

One single web page mapped into 3D world.

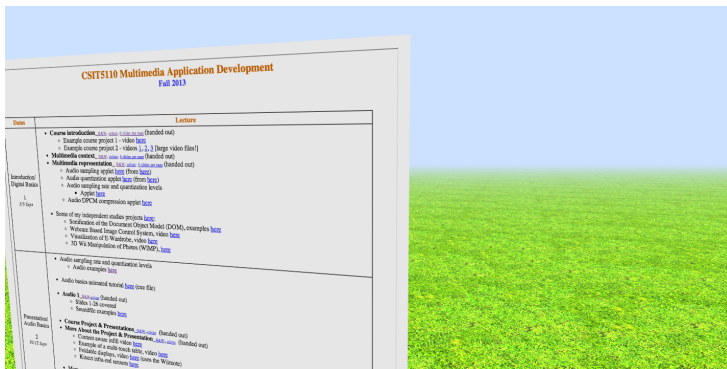


Figure : One single Webpage Mapped to Three-Dimension Scene





# Technical Details: Page Rotater

Map one or several pages into 3D world.

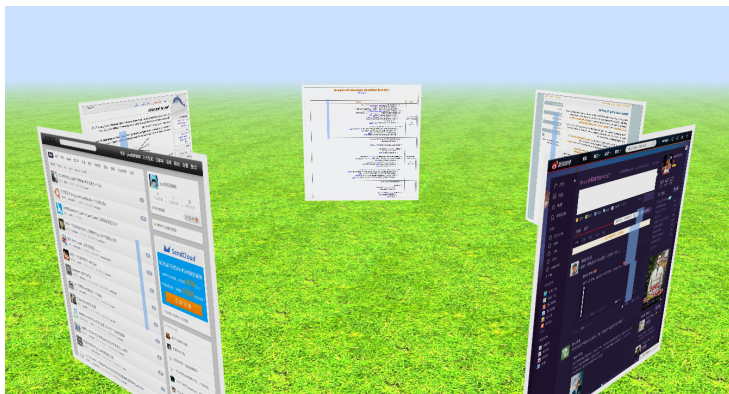


Figure : One single Webpage Mapped to Three-Dimension Scene



## Technical Details: Page Rotater

How we could combine the current webpage with a 3-D Scene.



Figure : Map a webpage to a 3D scene

So even in 3D world we can interact with our pages individually without problem.



# Technical Details: Page Rotater

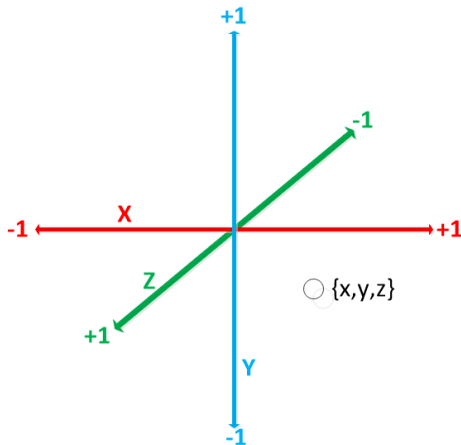


Figure : The Coordinate in ThreeJS



# Technical Details: Page Rotater

When there  $n$  pages, how to set their position and rotation in 3D scene.

1. calculate the angle for the  $i$ th webpage:  $angle = \pi * 2 * i / n$
2. The position of  $i$ th webpage:  $Position_x = radius * \sin(angle)$  and  $Position_z = radius * \cos(angle)$
3. The rotation of  $i$ th webpage:  $Vector3(0, angle, 0)$

We provide two ways to control your page:

- ▶ Orbit Controller
- ▶ Pointer Lock Controller



# Technical Details: Page Rocker

## HTML5 Web Audio Context:

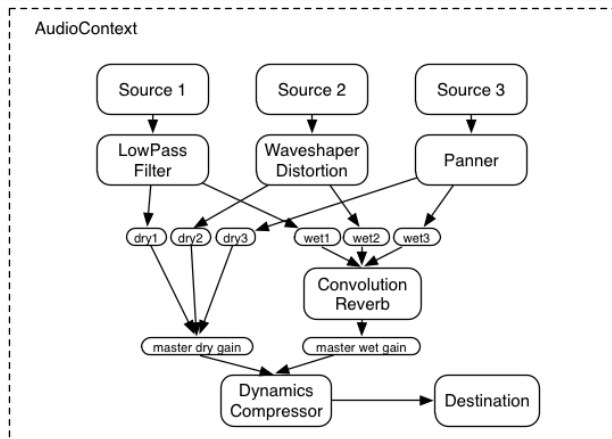


Figure : Web Audio Context



# Technical Details: Page Rocker

Now Four Ways to make page dance with music:

- ▶ **ZoomIn/ZoomOut:** images
- ▶ **Position Transition:** paragraph
- ▶ **Rotation:** links
- ▶ **Skew:** titles



# Technical Details: Page Rocker

Given An Element, how to decide their action(samples), *amp* is the strength related to corresponding frequency(1 of 256):

1. First we check the type of the element
2. if *images*:  $Scale = -0.5 + amp$
3. if *paragraph*:  $Position_x = -10 + 20 * amp$
4. if *link*:  $Rotation = (-30 + amp * 60)$  degree
5. if *titles*:  $Skew = (-30 + amp * 60)$  degree

The general equation:

$$Strength = BaseLine + amp * Range \quad (2)$$



## Technical Details: Page Rocker

But we can let user decide all the rocking details by providing configuration

Input how dynamically you want

The amp of rocking:


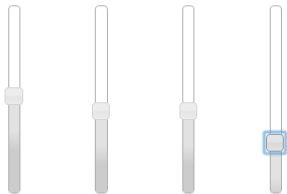


Image	Text	Links	Titles
51	43	43	26



The figure shows a user configuration interface for 'Rocking'. It includes a title 'Input how dynamically you want', a text input field for 'The amp of rocking' with the value '9', and a horizontal slider bar. Below this are four vertical sliders for 'Image', 'Text', 'Links', and 'Titles'. The values for these sliders are 51, 43, 43, and 26 respectively. The 'Titles' slider is highlighted with a blue square.

Figure : User Configuration for Rocking

Also, you can either choose one online music file or a local music file





# Issue: What Problems We Have Met

How to keep states for each singal webpage seperately?

- ▶ write the extension states to global *window* object using code injection

How to load user local file from an chrome extension dynamically?

- ▶ due to security policy, not allowed in popup extension. Also using code injection, we can load user file dynamically. The request now from the webpage we are browsing.

Generally we are not allowed to modify the original web page because it's offensive to users.

- ▶ Leave this problem to users, let them decide whether they trust us. But when the web site uses *https* protocol, we are denied.



# Development Details

- ▶ *Dev Language*: Javascript, HTML, CSS
- ▶ *Project Repo*: <https://github.com/KeithYue/PageRocker>
- ▶ *Team Work*:
  - ▶ LUO Xuan:
    - ▶ product manager
    - ▶ general/specific requirements analysis, prototype design
    - ▶ UI design, layout and CSS implement
  - ▶ WANG Yue:
    - ▶ chrome extension development, set up dev env
    - ▶ page rotater
  - ▶ LI Zhi:
    - ▶ page sizer
    - ▶ page rocker



# Development Details: Toolsets

- ▶ Version Control: git version 1.8.3.4
- ▶ Js Library: jQuery1.9.2, ThreeJS(Revision58)
- ▶ Prototype Design: XMind



# Development Details

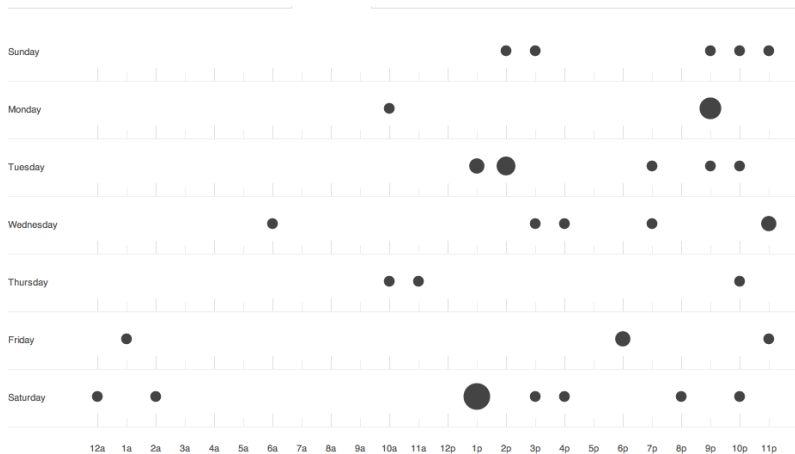


Figure : code commit frequency



# Future Work

How can we improve the current version:

1. page sizer:
  - ▶ use vertical direction of head movement to control scroll bar
  - ▶ change between tabs using horizontal movement
2. page rotater:
  - ▶ different ways to show multiple webpages
  - ▶ make controller more user friendly
3. page rocker:
  - ▶ involve more html elements
  - ▶ rock css realistic improvement
4. deploy *Rock Your Page* to Chrome Web Store



# Video Demo



# Q&A

