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パノラマブラウジングにおける動的なスクロール速度制御

Adaptive Speed Control for Panoramic Browsing

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1. Abstract

The scroll function on the web currently basically has direct transmission, units control:display ratio moving at 1:1. This system aims to be able to search comfortably by adaptivly controlling the speed of scrolling for panoramic browsing on the web.

2. Introduction

Adaptive scrolling speed, based on distance to significant point. Browsing panoramic (360 deg.) or photospherical (4 π sr) imagery. Phototrealistic imagery is 1D and 2D. 1D is 360° = 2π rad. 2D is 360$^\circ\times$ $\pm$90° = 4π sr.

This system ' s designated point of interest is that something notable in the scene that we want user to be able to find easily. This is a panoramic browsing system, using cursor-marked location and mouse or finger dragging to scroll imagery. If the cursor is close to a target location, scrolling is slow. If the cursor is far from the target, scrolling is faster.

The speed of scrolling is inversely related to distance from the target. We extended a panoramic browsing system using cursor-marked location and mouse or finger touch dragging to scroll imagery. We can be used on any terminal, PC, smart phone or tablet.

Panning of photo spherical imagery, with cylindrical or spherical topology, so left and right edges are virtually continuous. Control:Display ratio like transmission of a vehicle. It image is like that of fast engine turning geared down to spin wheels slower, or overdriven to spin wheels faster.

3. Implementation

We implemented a system that can deal with scrolling in one and two dimensional space. We implement speed control system with based

on web browser with dynamic behavior, programmed with html5, Javascript and jQuery. Relationship between html5, css, JS, jQuery, ... Prototype web browser is Google Chrome. Panorama browsing and mouse or finger dragging to scroll system with "jquery.panorama". And We extension the scrolling speed control system with JS and jQuery.

Now set the goal to picture's left end. As our approaches the goal, becomes scroll slower. Calculate the speed by the absolute value of the distance from the goal regardless of the left or right of the goal. As it approaches the goal it gets slow and moves faster when receding. Since the speed of scrolling is determined by the distance of the point touched at the beginning, the speed does not change until new drag is started.

The calculation of the system is as follows.

mouseDisplacement: The position of the mouse

$$\text{mouseDisplacement} = \text{mouseMoveStart} - \text{e.clientX} \quad (1)$$

naiveRange: The distance from cursor to the goal.

$$\text{naiveRange} = |\text{goal} - (\text{mouseMoveStart} + (\text{sceneDisplacement}\%\text{size}))| \quad (2)$$

normalizedRange: Normalization of range ($0 \leq \text{normalizedRange} \leq 1$)

$$\text{normalizedRange} = \text{range}/(\text{size}/2) \quad (3)$$

logGain: Logarithm of range ($-1 < \text{logGain} < 1$)

$$\text{logGain} = 2 \times (\text{normalizedRange} - 1) \quad (4)$$

$$\text{gain} = 10^{\text{logGain}} \quad (5)$$

s sceneDisplacement: Final displacement

$$\text{sceneDisplacement} += \text{mouseDisplacement} \times \text{gain} \quad (6)$$

4. Implications and Future Work

This system is useful when looking for a desired location on web-shared panoramic imagery. Future vision includes extension to vertical (elevation) as well as horizontal (azimuthal), and also range (longitudinal distance). Besides mouse click and finger drag, scroll wheel control gain could also be modulated.

5. Conclusion

This system is adaptable to any system on the web. For example it could make it easy to find particular point on map, or a significant or important place in a photo.

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2) "jQueryPanorama" http://www.thepetedesign.com/demos/panorama_viewer_demo.html#

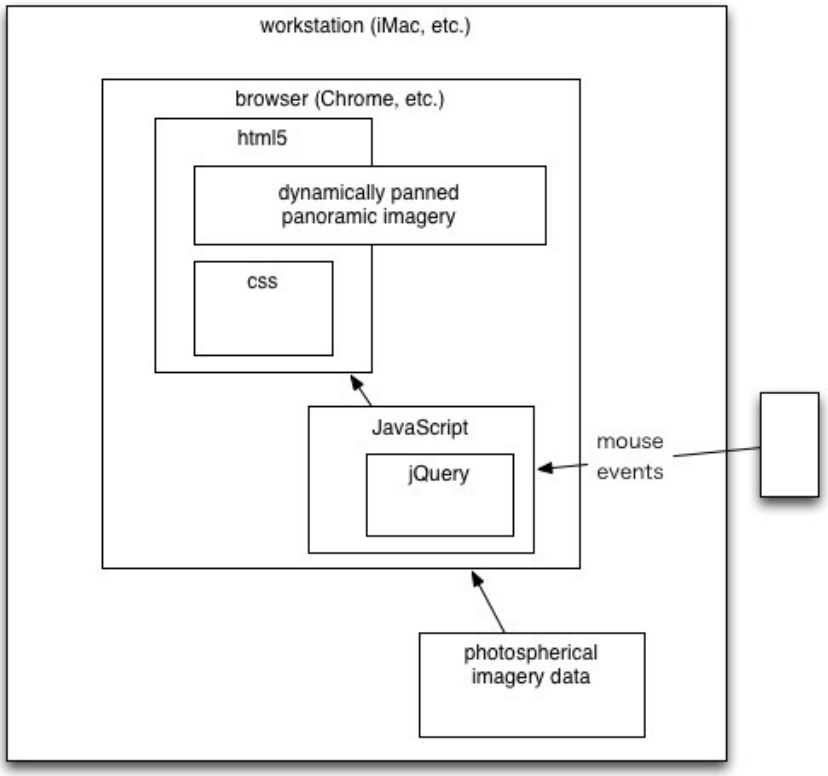

Fig. 1 Architecture

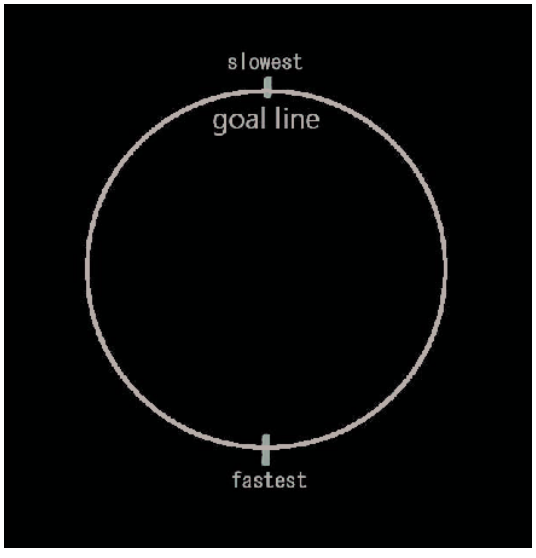

Fig. 2 Wrap-around

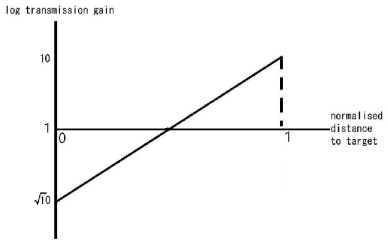

Fig. 3 Scale mapping

Fig. 4 Screen shot