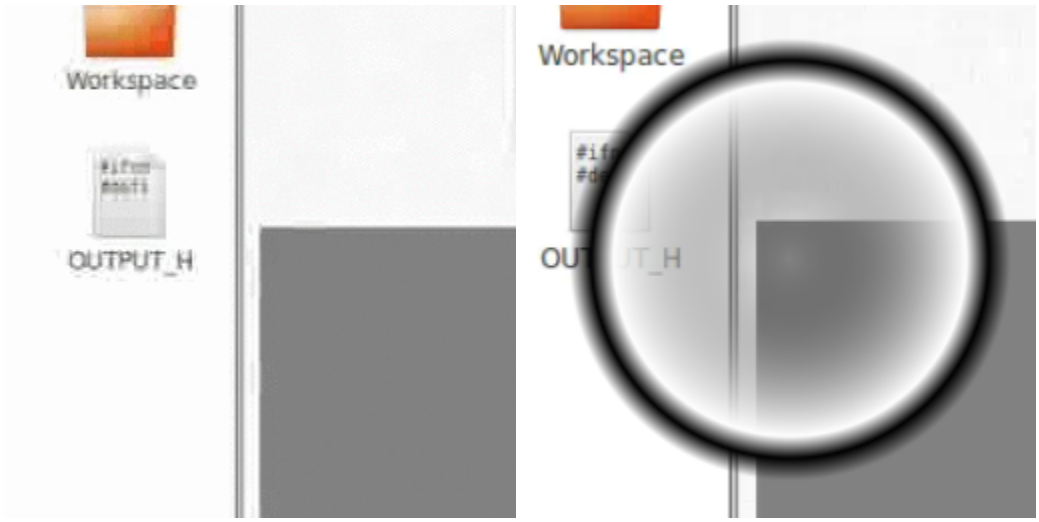
New Touch Feedback Animation

by: Yuwei Huang
status: Draft

Background

Currently the touch feedback animation is a intricate radial gradient that increases its size over time:

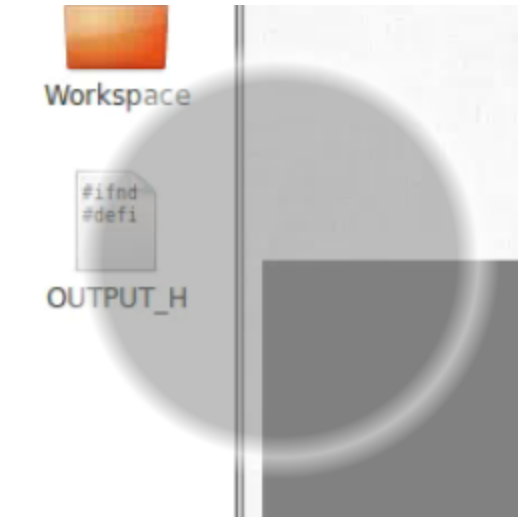


(Animation quality worse than on the actual device)

It has a few problems:

- User usually can't see the press-and-hold feedback until the last few milliseconds since the size grows from zero to max and for most of the time the feedback animation is covered by the user's finger.
- The texture is pre-generated at 512x512 resolution and then scaled to be drawn on the canvas. Linear interpolation will make the intricate details in the texture look slightly blurry.
- There is a transparent black-to-solid white transition starting from the center of the texture to 80% of the radius, which makes the texture look quite empty inside and less noticeable.
- The radius is linear to time. It would be more natural if more time is spent in larger radius than in smaller radius.
- (Personally feel the solid black ring on the outside looks distracting O_o)

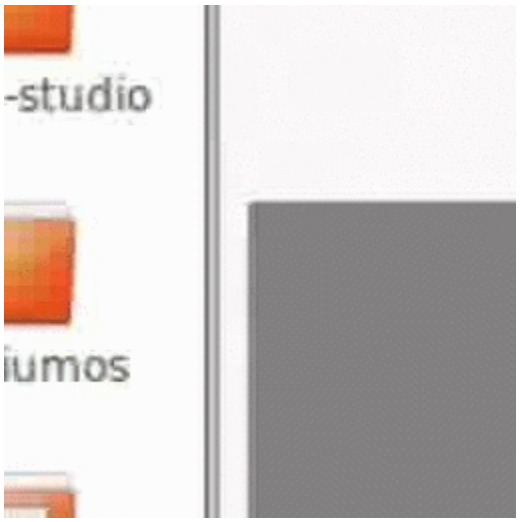
Design Idea



(Animation quality worse than on the actual device)
Referenced specs from material design's unbounded ripple section.

Motion / Radius-time and Alpha-time Functions

This is conforming to the material design spec. Will be used by both simple touch feedback and long press feedback with different r_max.



- Decelerated radial expansion. Spend more time in larger radius.
- Linear fade-out.

Functions:

Expansion: $$r(p) = \frac{1 - 400^{-p}}{1 - 400^{-1}} r_{max}$$

Fade-out: $$a(p) = 1 - p$$

r: Radius.

a: Alpha, or transparency. 0 <= a <= 1.

p: Progress, current time delta over total duration, 0 <= p <= 1.

Constants

	r_max (dp)	Duration (ms)
Simple Touch	25	300
Press-and-hold	55	

Texture Pattern

The texture pattern will still be shared by simple touch feedback and press-and-hold feedback.

- Simple design: Just gray on the inside and a white ring on the outside.
- No intricate pattern. Doesn’t look bad under linear interpolation.
- The inside color is solid and doesn’t look empty.
- Similar to the animation on iOS client.

Definition:

- Inner circle: Gray (50% RGB), 50% opacity, solid color from center to 80% radius
- Outer ring: White (100% RGB), 50% opacity at 90% radius. Transit from gray at 80% radius and transit to transparent at 100% radius.