Gesture Button Implementation

Overview

This document describes the implementation of the glowing gesture button feature for loomOS, inspired by the classic webOS home button design. The gesture button provides an intuitive way to reveal the dock when it's hidden, enhancing the user experience with a familiar interaction pattern.

Features

Visual Design

- **Shape**: Small, pill-shaped button (16px × 8px)
- **Position**: Fixed at the bottom center of the screen, just below where the dock appears
- **Styling**: Glassmorphism effect matching the existing design system
- **Glow Effect**: Pulsing animation with multiple shadow layers for depth

Animations

1. **Pulsing Glow**: Continuous 2-second pulse animation that draws attention
2. **Shimmer Effect**: Inner gradient shimmer that moves across the button
3. **Hover Intensification**: Faster pulse and brighter glow on hover
4. **Scale Animation**: Subtle scale-up on hover using Framer Motion

Behavior

- **Auto-Show**: Appears when dock is hidden (desktop only)
- **Auto-Hide**: Disappears when dock is visible or on home/dashboard pages
- **Hover Interaction**: Hovering over the button reveals the dock
- **Responsive**: Only visible on desktop (≥768px width)
- **Z-Index**: Positioned at z-9998, just below the dock (z-9999)

Implementation Details

Component Structure

```
components/webos/
├── gesture-button.tsx      # Main gesture button component
└── app-dock.tsx            # Updated dock with gesture button integration

app/styles/loomos/
└── gesture-button.css      # Gesture button animations and styles
```

Integration with Dock

The gesture button is tightly integrated with the dock's auto-hide behavior:

1. **State Sharing**: The dock passes its visibility state to the gesture button
2. **Callback Communication**: Gesture button calls `onShowDock` when hovered
3. **Coordinated Visibility**: Button shows when dock is hidden, hides when dock is visible

4. **Smooth Transitions**: Both components use Framer Motion for fluid animations

CSS Animations

Glow Pulse Animation

```css
@keyframes gesture-glow-pulse {
  0%, 100% {
    box-shadow:
      0 0 20px rgba(138, 138, 138, 0.4),
      0 0 40px rgba(138, 138, 138, 0.2),
      0 0 60px rgba(138, 138, 138, 0.1);
  }
  50% {
    box-shadow:
      0 0 30px rgba(138, 138, 138, 0.6),
      0 0 60px rgba(138, 138, 138, 0.4),
      0 0 90px rgba(138, 138, 138, 0.2);
  }
}
```

Shimmer Effect

```css
@keyframes gesture-shimmer {
  0% {
    transform: translateX(-100%);
    opacity: 0;
  }
  50% {
    opacity: 1;
  }
  100% {
    transform: translateX(100%);
    opacity: 0;
  }
}
```

Design System Compliance

The gesture button follows loomOS design principles:

- **Glassmorphism**: Uses `backdrop-filter: blur(10px)` and semi-transparent backgrounds
- **Color Palette**: Neutral grays matching the existing dock styling
- **Shadows**: Multi-layer shadows for depth (following `--shadow-glass` pattern)
- **Motion**: Spring animations with `stiffness: 300-400, damping: 25-30`
- **Responsive**: Desktop-only feature respecting mobile-first approach

Usage

In app-dock.tsx

```tsx
import { GestureButton } from './gesture-button';

export function AppDock() {
  const [isVisible, setIsVisible] = useState(true);

  return (
    <>
      {/* Gesture Button */}
      <GestureButton
        isDockVisible={isVisible}
        onShowDock={() => setIsVisible(true)}
        isHomePage={pathname === '/' || pathname === '/dashboard'}
      />

      {/* Dock */}
      <motion.div className="dock-container">
        {/* ... dock content ... */}
      </motion.div>
    </>
  );
}
```

Browser Compatibility

- **Modern Browsers**: Full support (Chrome, Firefox, Safari, Edge)
- **Backdrop Filter**: Supported in all modern browsers
- **Framer Motion**: Requires React 16.8+
- **CSS Animations**: Universal support

Performance Considerations

1. **GPU Acceleration**: Animations use `transform` and `opacity` for optimal performance
2. **Conditional Rendering**: Component only renders when needed (desktop + dock hidden)
3. **Debounced Hover**: Uses React state to prevent excessive re-renders
4. **Lightweight**: Minimal DOM footprint (2 div elements)

Accessibility

- **Keyboard Navigation**: Dock can still be revealed via mouse movement to bottom edge
- **Screen Readers**: Button is decorative; dock has proper ARIA labels
- **Reduced Motion**: Consider adding `prefers-reduced-motion` media query support

Future Enhancements

1. **Touch Gesture**: Add swipe-up gesture support for mobile devices
2. **Customization**: Allow users to toggle gesture button in settings
3. **Haptic Feedback**: Add vibration on mobile when gesture is triggered
4. **Color Themes**: Support for different color schemes beyond neutral gray

5. **Reduced Motion**: Respect `prefers-reduced-motion` system preference

Testing Checklist

- [ ] Button appears when dock is hidden on desktop
- [ ] Button disappears when dock is visible
- [ ] Button disappears on home/dashboard pages
- [ ] Button disappears on mobile (< 768px)
- [ ] Hovering button reveals dock
- [ ] Glow animation plays continuously
- [ ] Shimmer effect animates smoothly
- [ ] Hover intensifies glow effect
- [ ] Dark mode styling works correctly
- [ ] No performance issues or jank
- [ ] Works across all major browsers

Related Files

- `components/webos/app-dock.tsx` - Main dock component
- `components/webos/gesture-button.tsx` - Gesture button component
- `app/styles/loomos/gesture-button.css` - Gesture button styles
- `app/globals.css` - Global styles (imports gesture-button.css)
- `DOCK_IMPLEMENTATION.md` - Original dock documentation

References

- webOS Design Principles (https://www.webosose.org/docs/guides/design/design-philosophy/)
- Glassmorphism UI Trend (https://uxdesign.cc/glassmorphism-in-user-interfaces-1f39bb1308c9)
- Framer Motion Documentation (https://www.framer.com/motion/)

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