STButton: Exploring Opportunities for Buttons with Spatio-Temporal Tactile Output

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CHI '24 Interactivity

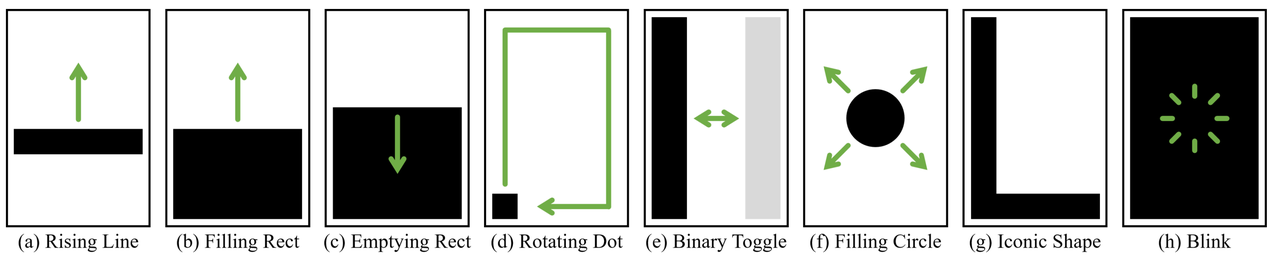
> Buttons inherently have been **passive**. They were only designed to be **pressed**.
> However, **what if the buttons can dynamically talk back to us?**

STButton

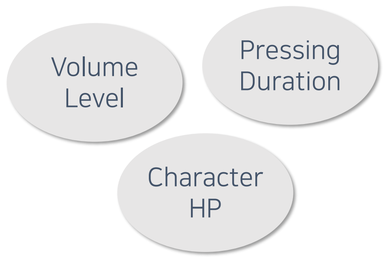
Button with **high-resolution spatio-temporal tactile surface** *(5×8 Braille Display)*

*What if the **button** can convey more detailed information through the **tactile channel**?*

*What are opportunities for buttons with **highly expressive tactile display** on top?*

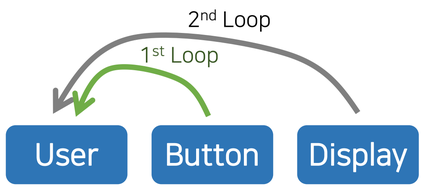


Can be 'pressed'
This is what buttons are for!!



Active & Talkative
Convey additional information through spatio-temporal haptic feedback

Faster Interaction Loop
Through the one-stop feedforward/ feedback loop at button press

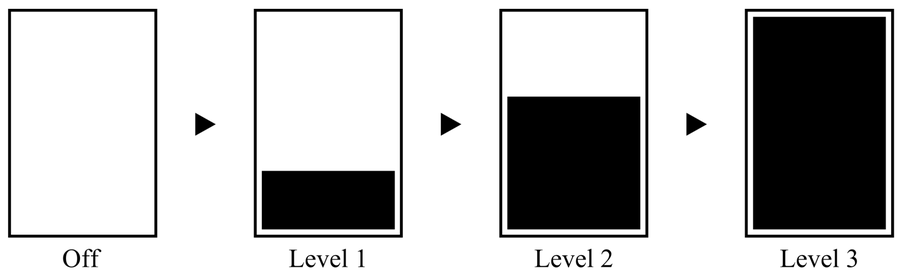


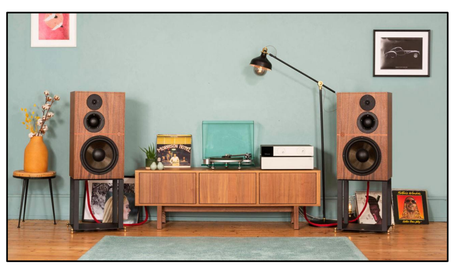
Happier User!!

Five Demo Scenarios

Demo 1: In-car Heated Seat Button

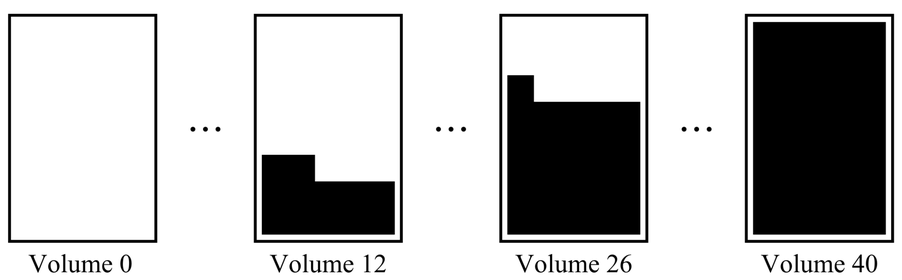
Button convey **System Status** *(heat level)*
Feedforward the status **before press**





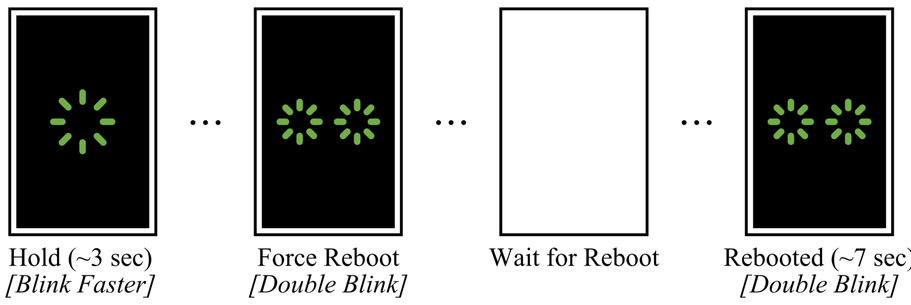
Demo 2: Speaker Volume Control Button

Button convey **System Status** *(volume level)*
Feedback the updated status **during press**



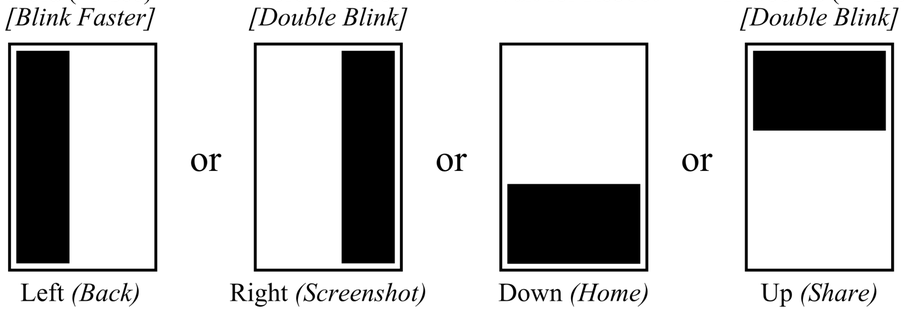
Demo 3: Laptop Power Button

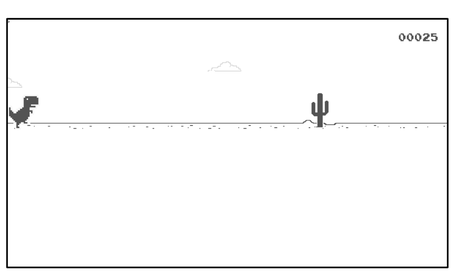
Button convey **User Input** *(pressing duration)*
Feedback the input **during press**



Demo 4: VR Menu Button

Button convey **User Input** *(selected menu)*
Feedforward the input **during press**





Demo 5: Game Controller Button

Button afford **User Input** *(restart game)*
Signify the input **before press**