



Software Usability

Course notes for CSI 5122 - University of Ottawa

2023-Deck J:

Case Studies of Household Appliances

Timothy C. Lethbridge

< Timothy.Lethbridge@uottawa.ca >

<http://www.eecs.uottawa.ca/~tcl/csi5122>

Key guideline: Make the **most common use cases utterly simple**

Assume use by kids, seniors, occasional users

Assume people will never read the users manual, or will forget/lose it

Reduce number of buttons / steps / adjustments needed

Don't rely on 'order of operations'

- Allow settings to be made in different orders and at any time

Plus, of course: Good feedback and error messages

Guidelines for physical controls

Make physical buttons/knobs easy to

- Feel and find
- Guess / confirm function
- Use quickly and confidently

People will use buttons in the dark, without glasses, or simply without looking

- Make important buttons and icons big, not confusable
- Use shapes, indentations, raised markings, offsets
- Don't rely *only* on touch screen or pad
- Provide haptic and visual feedback of presses

There is normally a clear 'operational profile'

20-90% of uses: Top use case, by far the most frequent interaction

7-50% of uses: Second most frequent interaction

5-30% of uses: Third most frequent

3-25% of uses: Next ...

Key use cases: Washing machine (watch profs video)

1. Start and run (default/normal settings)
2. Adjust to different water **temperatures**
3. Adjust for **load size / water level** (unless system can detect)
4. Adjust for **dirty** (unless system can detect)
5. Adjust for **delicate** fabrics
6. Ask for **extra rinse** (e.g. if items are still soapy)
7. Ask for **spin only** (to dry out anything wet)
8. Pause, allowing silence or an item to be added
9. Resume
10. Start after a delay

Key use cases: Microwave oven (watch prof's video)

1. **Start and run on maximum for any number of minutes and seconds**
2. **Open door to suspend cooking**
3. **Cancel while running**
4. **Resume cooking**
5. **Change heating power**
6. **Run a timer without cooking**
7. **Set the clock initially or after a power blackout**

There are obviously more, but this will cover key ones

Key use cases: TV remote control

1. **Power on/off**
2. **Change/scroll channels/menu-items**
3. **Change volume up/down**
4. **Direct-select channel by number**
5. **Go to menu**
6. **Select in menu**
7. **Pause/Resume**
8. **Select input device**

Other anecdotes regarding appliances

NNGroup on Nest thermostat

- They couldn't adjust temperature at will (top use case)
- <https://www.nngroup.com/articles/emotional-design-fail/>

Consumer devices often turn consumers off!

<https://www.nngroup.com/articles/why-consumer-products-have-bad-ux/>