Embedded System Design and Modeling

IV. FSM Patterns

FSM Patterns

- **Design patterns**: reusable templates which appear often in applications
- Patterns
  - Operating on signal transitions
  - Debounce (one-sided, two-sided)

Operating on signal transitions

- For boolean signals/conditions
- Use when information is in the signals' **fronts** (edge / transition) rather than in its values
- Solution: detect signal transitions
  - rising edge
  - falling edge
  - both

Detect rising edge

- Draw here: detect rising edge
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Detect falling edge

- Draw here: detect falling edge
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Detect any edge

- Draw here: detect any edge
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Debouncing

- For boolean signals/conditions
- Bouncing: real signals look like this:

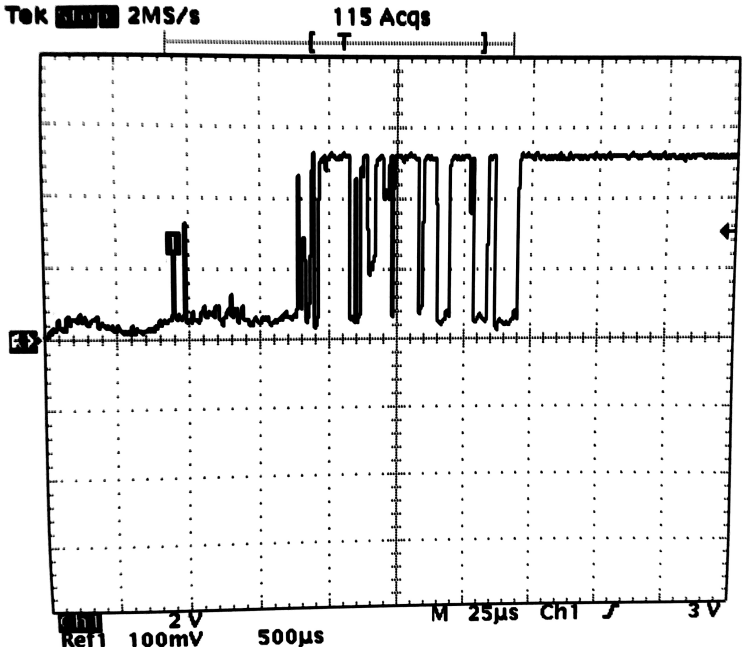

Figure 1: Signal change when pushing a button

- Use debouncing to avoid spurious transitions

Debouncing rising edge

- Draw here: debounce rising edge
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Debouncing falling edge

- Draw here: debounce falling edge
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Debouncing both edges

- Draw here: debounce both edges
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