Team 9

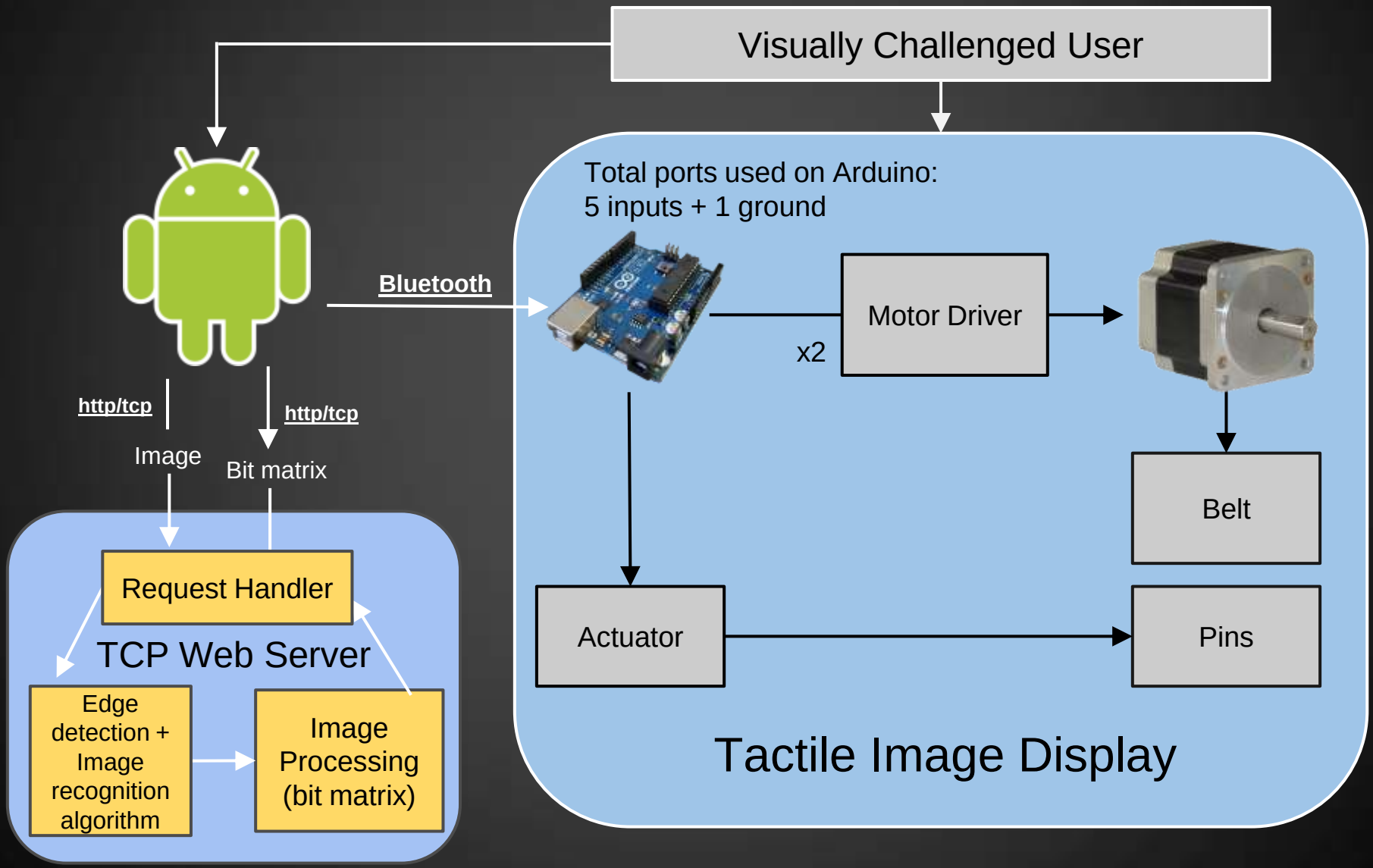
Tactile Image Display

Wee Loong Kuan, Xiang Lin, Clement Loh, Chin Yang Oh

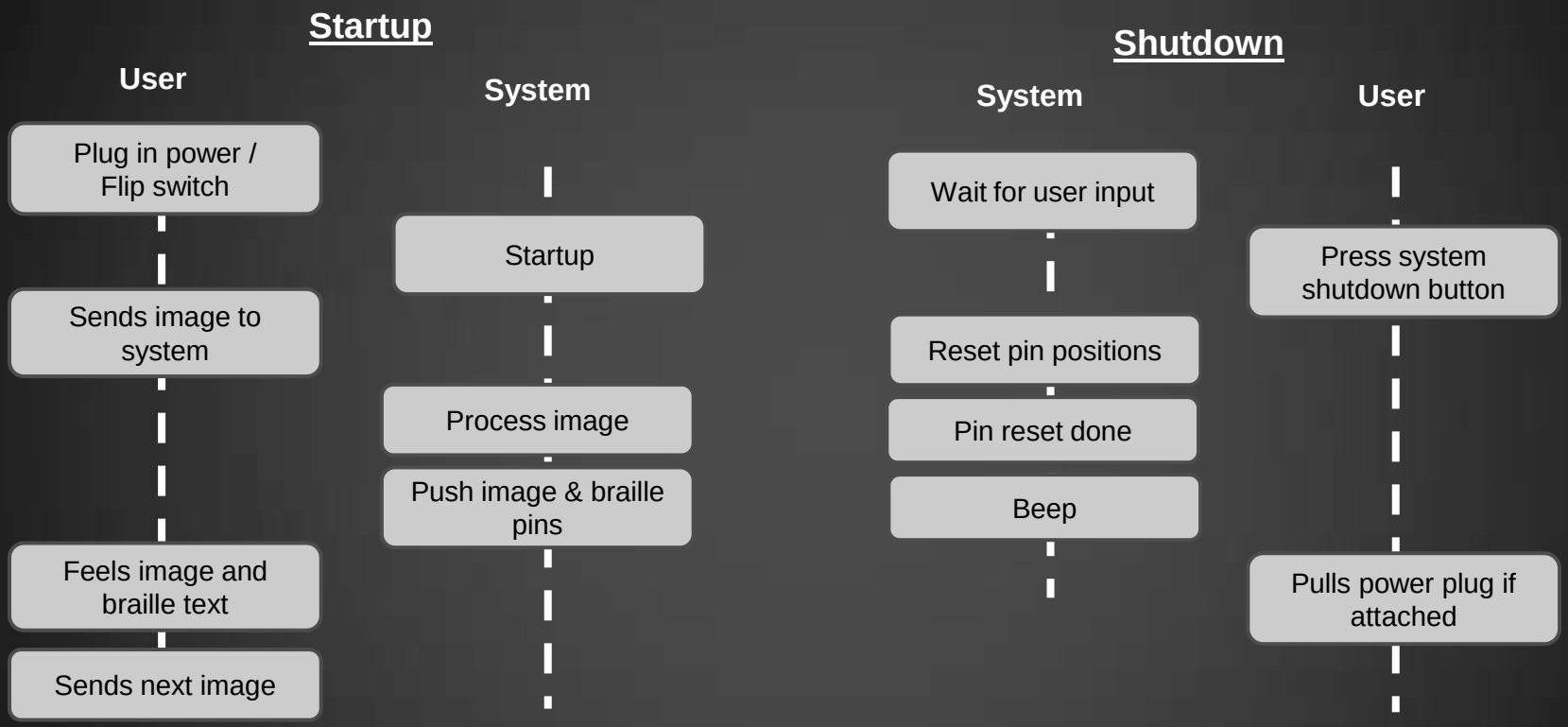
Status Update

- Project Idea:
  - Inexpensive method of converting a computer image to a tactile image for blind people.
- Progress so far:
  - Parts ordered, waiting for delivery
  - High level design done
  - Specifics require parts for experimentation (size details, shape of pins, granularity of stepper motor, etc…)

Architecture



Use Cases



Other Use Cases

1. Pin is blocked by obstacle and cannot be pushed
2. Connection between mobile and arduino lost
3. Image description cannot be found

Risks & Mitigation

Risks	Mitigation
1. **[Show Stopper]** Lossy data from wireless transmission between phone and Arduino 2. **[Show Stopper]** Pins may be pushed down by user's fingers while reading 3. **[Ancillary]** Stepper motor does not have enough resolution 4. **[Ancillary]** Pins may not be reset during shutdown / power supply may be cut abruptly	1. Consider wired/serial connections Implement ECC in communication protocol 1. Try out other pin shapes to make them lock better. 2. Use gear ratios to achieve needed resolution Reduce tactile image resolution to place pins further apart. Implement braille description separately (not using the stepper motor) 1. User can ensure this by toggling off every ON pin at startup

Backup Plans

Plan B: Lose braille labelling.
Plan C: Classify input images into categories and print out pre-computed images that represent those categories. (E.g. print out apple for any fruits)