Voice Controlled Video Console

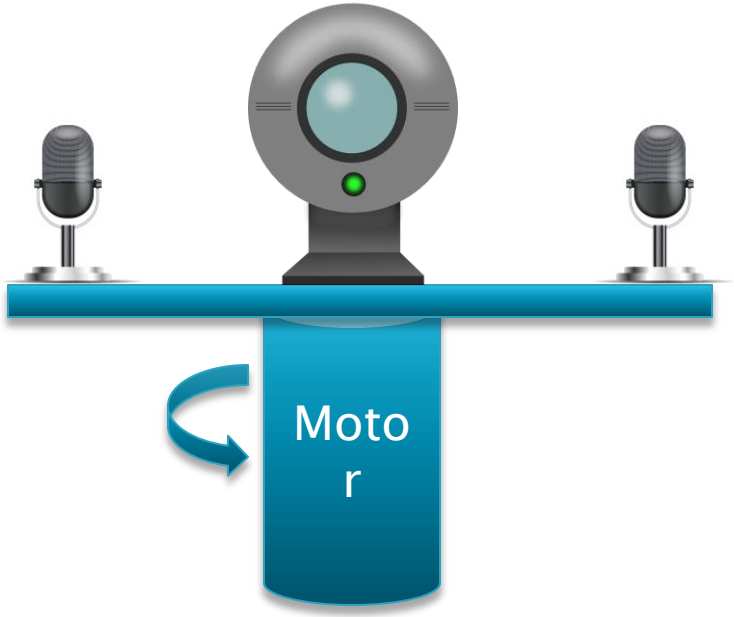
Ben Horkley and Jonny Surick

6.111, Fall 2013

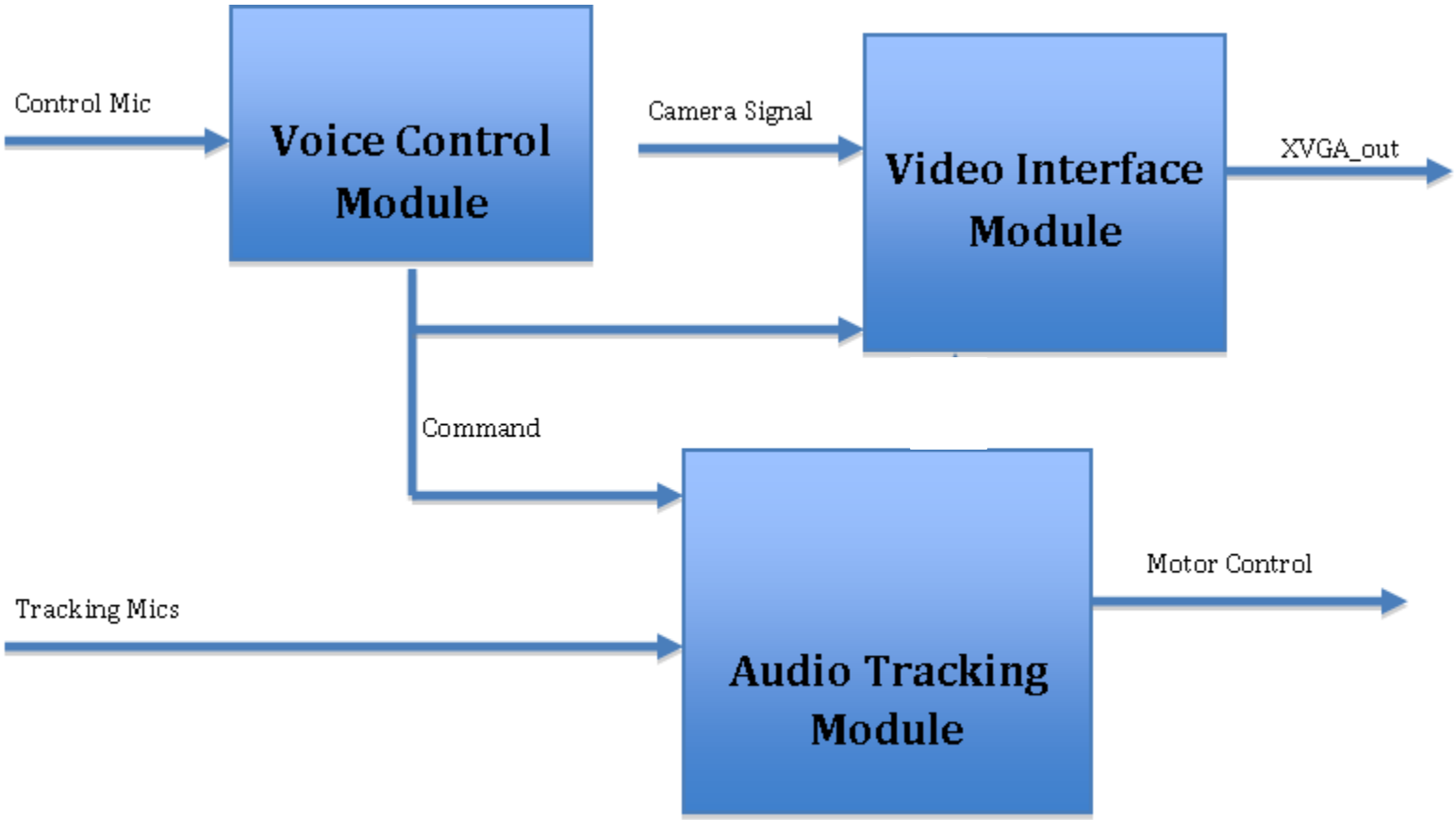
Voice Recognition is Everywhere

Console features

- Camera automatically tracks voice of speaker
- Voice commands control both camera and video display


Moto
r

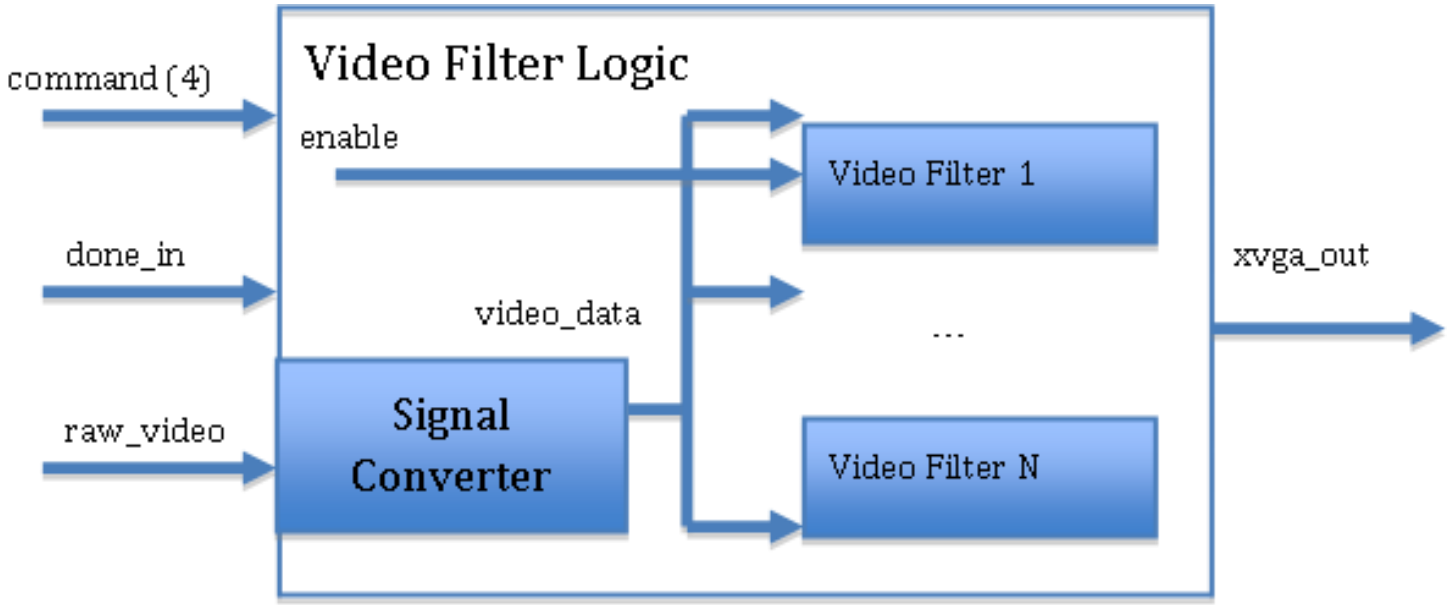
Overall system



Video interface

- Displays video from camera with filters
  - Color filters: red, sepia, B/W
  - Blur
  - If time: more complex filters
    - Motion blur
    - Fade in/out
- Receives commands from voice control module

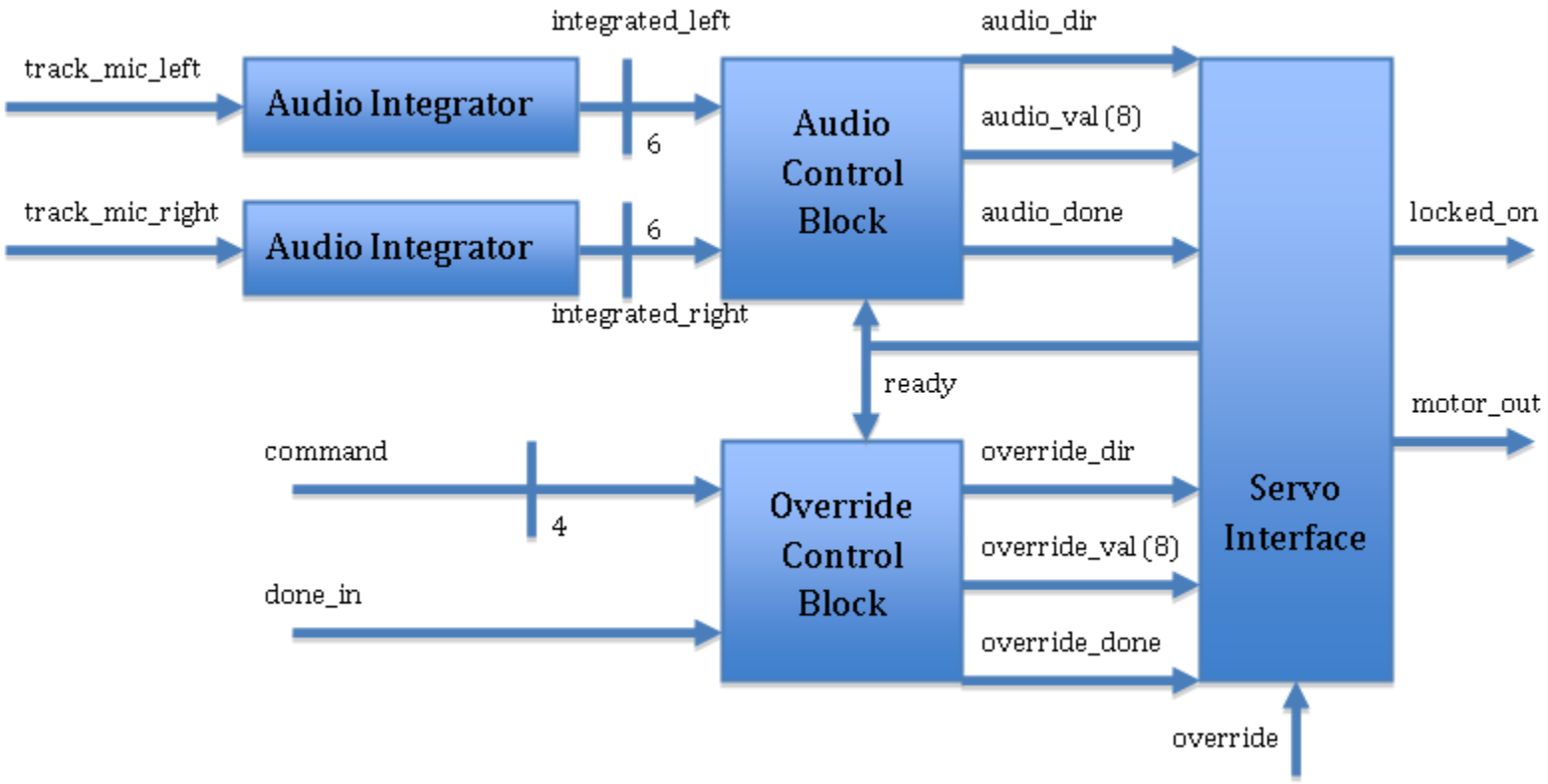
Video interface



Audio tracking

- By default, camera follows audio source
  - Measures differential level on mics mounted on either side of camera
- Can be overridden by voice commands
- Camera is controlled by HS-311 Servo Motor

Audio tracking



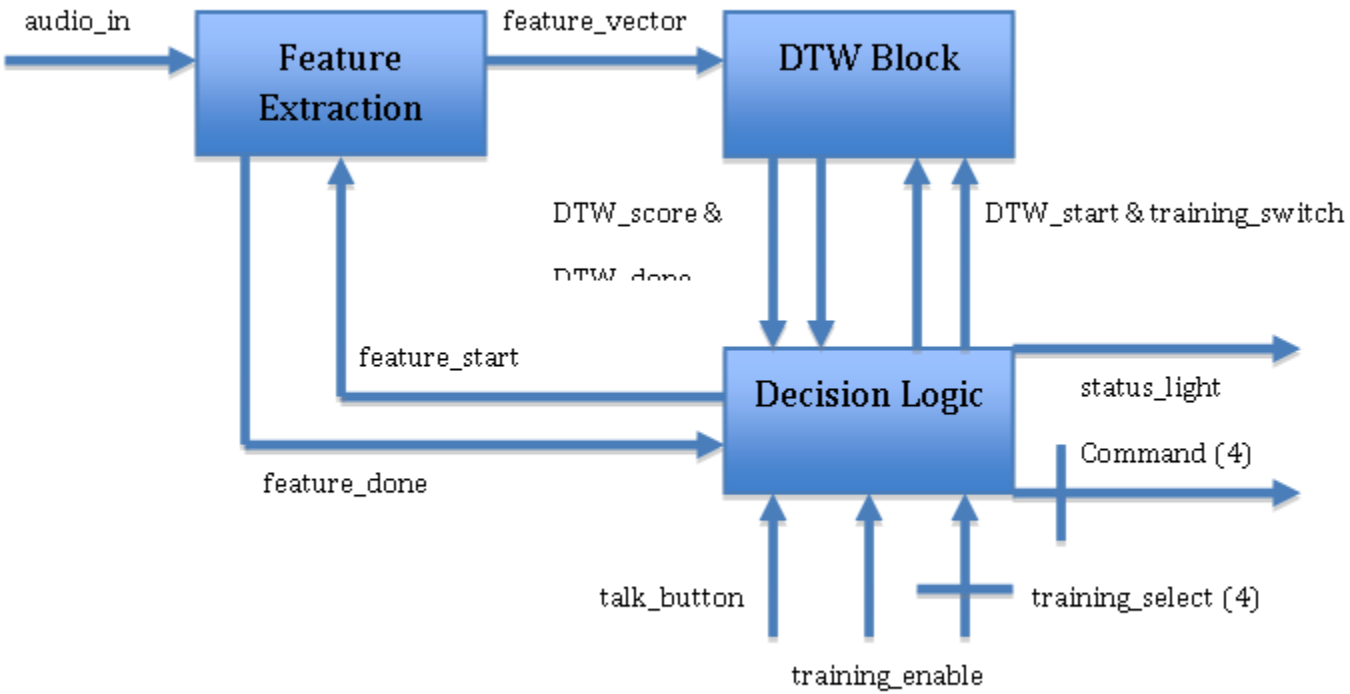
Voice control

- Trained to recognize one voice command for each action
  - Feature extraction and comparison on ~1 second samples
- Commands control both video display and camera tracking
  - Select video filter
  - Override automatic tracking to manually move camera

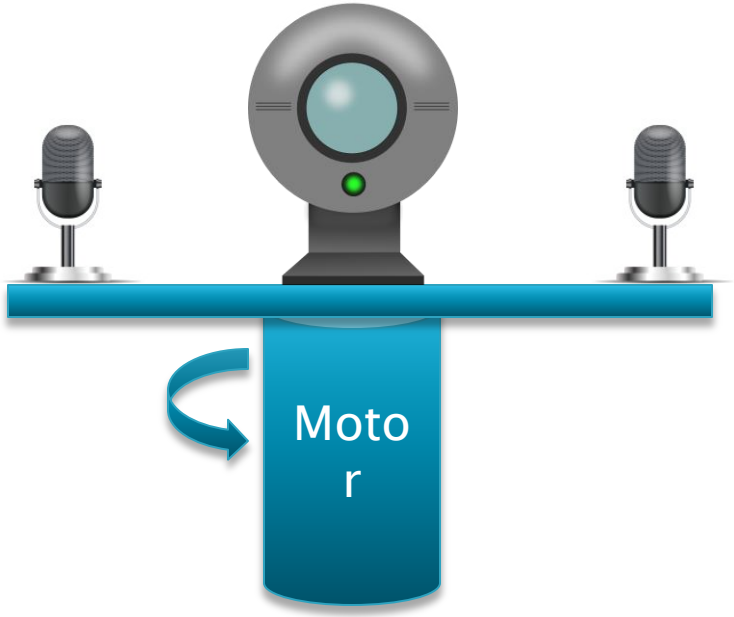
Planned Voice Commands

- 4 Initial Commands For Video
  - “None”
  - “Red”
  - “Black”
  - “Blur”
- 4 Commands For Motor Control
  - “Right”
  - “Left”
  - “Go”
  - “Stop”

Voice control



Timeline

- 11/17
  - Video: working NTSC-RGB conversion
  - Tracking: manual servo setting
- 11/24
  - Video: working filters, set from kit
  - Tracking: working audio tracking, build assembly
  - Voice: software prototype (MATLAB or Python)
- By Thanksgiving
  - Transfer voice to hardware and integrate
- Post-Thanksgiving
  - General debugging and finishing

Questions?