Robotic Activity Support (RAS)
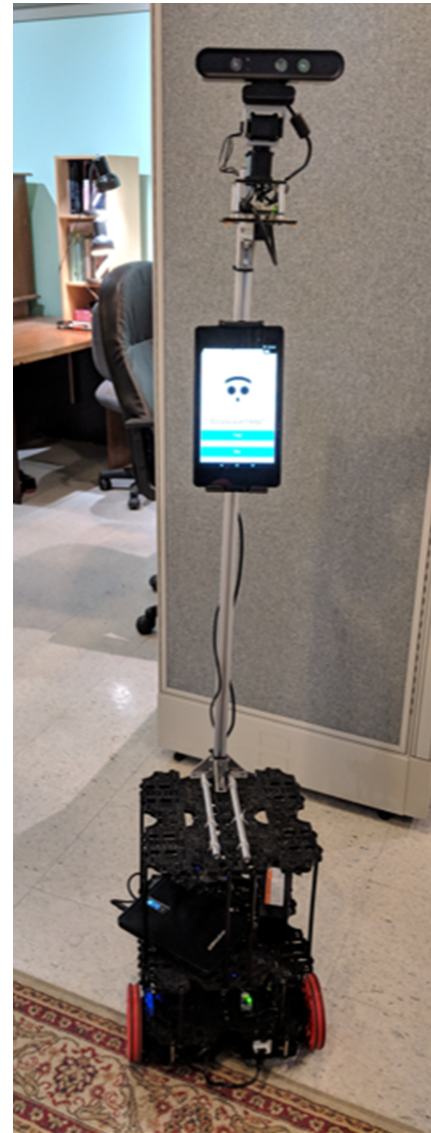
A Cognitive Assistant for the Smart Home

Diane J. Cook
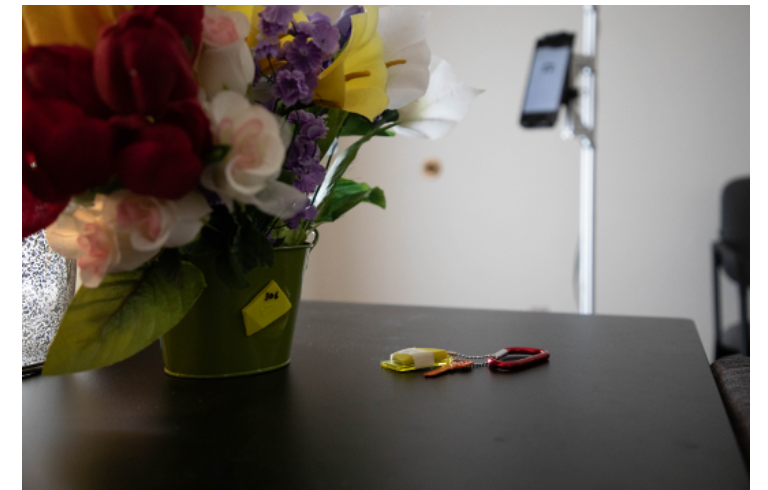Maureen Schmitter-Edgecombe
Bryan Minor

Overview

- Half of adults over 85 need help with activities of daily living (ADLs)
- Can we build a robotic cognitive assistant?
  - Help complete ADLs
  - Integrate with smart home sensors for activity detection
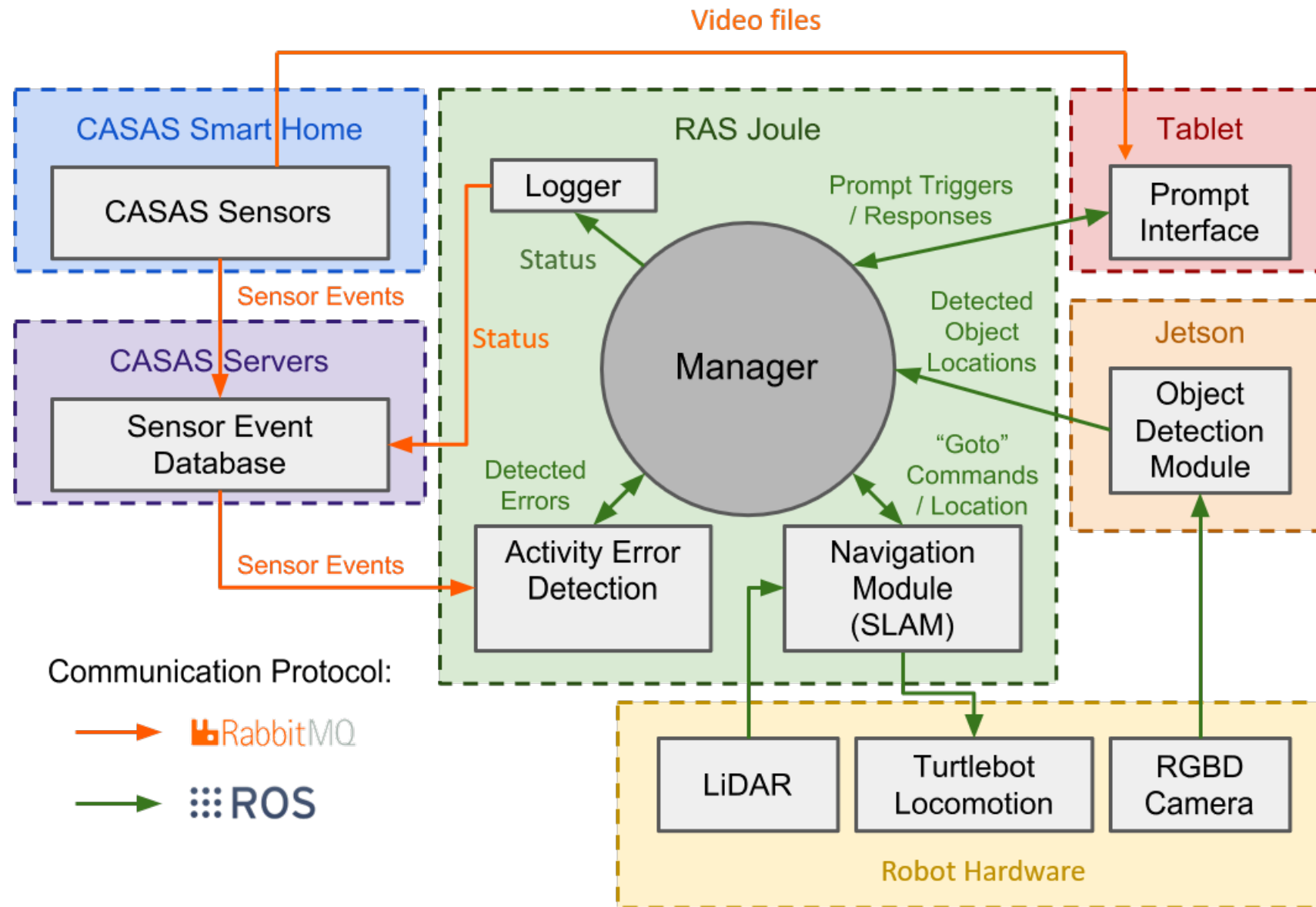 - Elder-friendly user interface

← The RAS platform

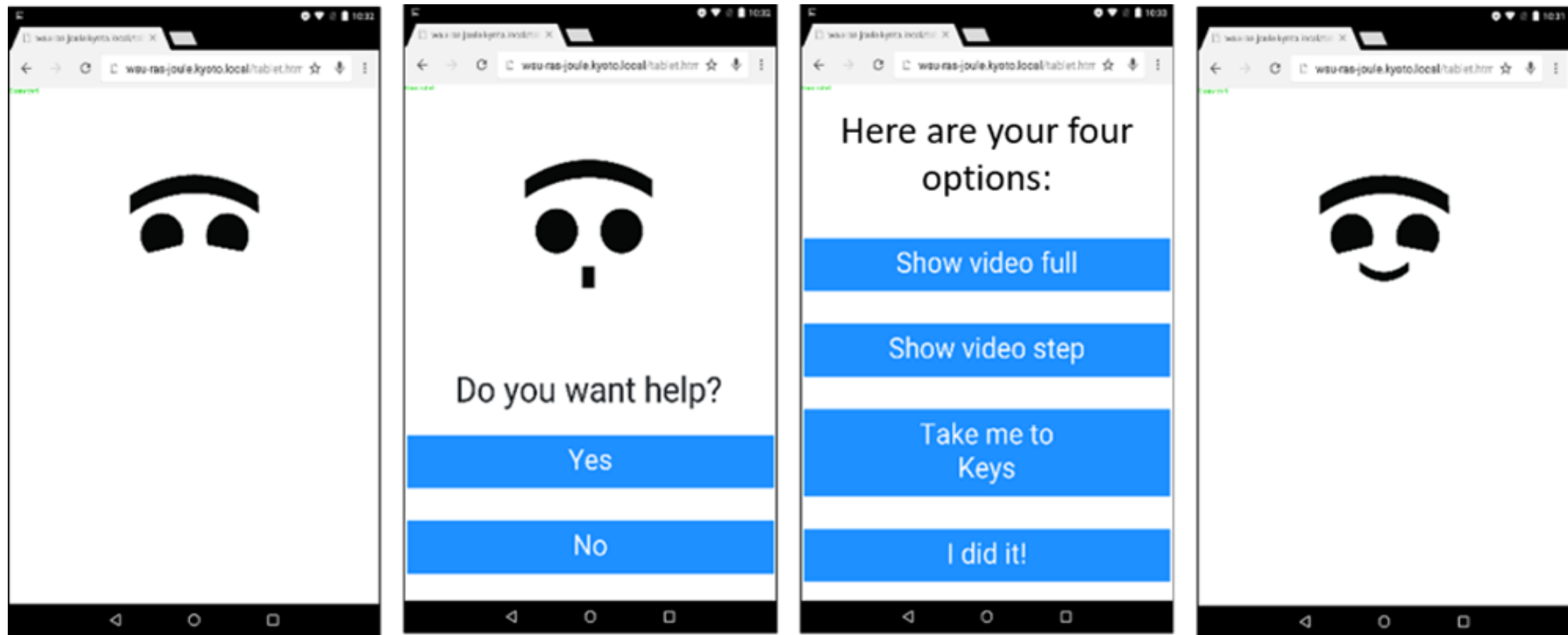RAS integrates with ↗ smart home ↘ sensors
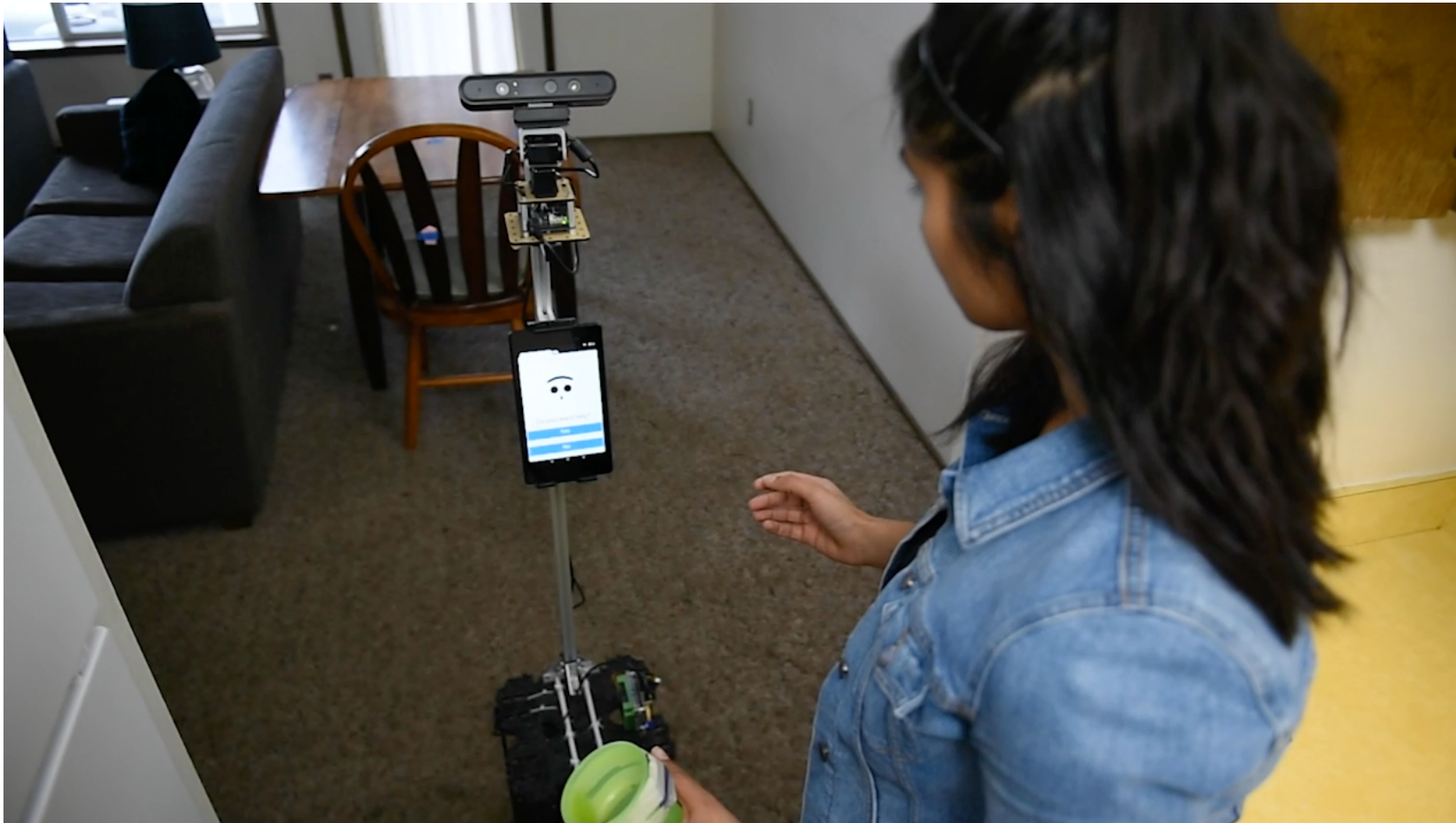
Software Architecture

User Interface

- RAS uses audio/video prompts on tablet
  - Show steps needed to complete activity (full video, next step, take to object)
  - Facial expressions help users know what RAS is "thinking"

Experimental Results

- **Smart Home Testbed:**
  - 26 young adults; 26 older adults
  - Scripted tasks with errors
  - Evaluate interaction
  - Results:
    - Next-step video most useful
    - Improve speed and detection

- **In-Home Experiment:**
  - 2 participants' homes
  - RAS installed for 3 days
  - Detect errors in daily activities
  - Results:
    - 83% intervention success rate
    - Improve activity completion to 91%

Email: bminor@wsu.edu
Web: casas.wsu.edu
YouTube: WSU SERC

WASHINGTON STATE UNIVERSITY

CASAS
Center for Advanced Studies in Adaptive Systems