Activity	Details (Stanford)	Details (Tokyo Tech)	Findings	Implications
Bench Mark	**Shopping Carts:** See existing shopping carts, how they served older adults, advantages and disadvantages with respect to that. **Fridge:** See ergonomics of existing refrigerators. Evaluate the usability of features on existing "smart" fridges, and if they filled user needs. **Projection:** Look at existing solutions for projecting 2D/3D images.	tbd	**Cart:** There was already an existing product tailored to older adults which combined many features we were thinking of. **Fridge:** ● There existed no feature to detect expiration dates automatically. ● Smart fridge interface was difficult to use and relied heavily on connection with a smartphone. (e.g. Camera feature buried in menus, text very small despite large screen size) ● Lower compartments required user to bend over or squat, putting strain on knees. **Projection:** Existing implementations projected a 3D image on a 2D surface, tracking user's head or eyes	● We decided not to pursue the "cart" solution because we felt we couldn't improve much on them. ● Existing smart fridges (e.g. the Samsung Family Hub) had many interesting features, but was not user-friendly; There was space to improve ease of use and interface. ● 3D image projection is quite common now, so it would not require a huge effort to implement in any solution.
Need Find	**Supermarket:** Observe the behaviors of older adults when grocery shopping. **Community Center Cafeteria:** See social interactions between older adults and center staff/other older adults.	**Community Centers:** Interviewing older adults about their grocery shopping and cooking habits. Asking their thoughts on various ideas for solutions.	**Stanford:** ● Some older adults went not just for the food but to socialize with others (both staff and other older adults) ● Older adults were reluctant to use products that are coded as "for old people" ● Some older adults experienced problems reaching low items **Tokyo Tech:** ● Older adults were not really interested in talking to new older adults, sticking to their existing friend circles. However they were interested in talking to younger people ● Older adults were conscious of food's effect on their health (e.g.	● We should take the social aspect into account in solutions ● Don't assume older adults would necessarily be interested in meeting new people in their age group: Try facilitating interactions between age groups, or within existing social circles ● Users would be open to learning new recipes ● User interfaces can assume some familiarity with technology, especially considering people who will become older adults in the next decade ● Ergonomic features (if relevant) should be taken into account in any design, minimizing the

			they reduce soy sauce consumption) ● Some older adults were comfortable with tech (e.g. using smartphones for food delivery) ● Some older adults used backpacks to transport their groceries but had trouble putting them on. ● Older adults tended to buy excessive quantities of food, but regret it later as they could not finish all of it and had to throw it out ● Currently getting interview feedback for our DarkHorse by showing them a video	amount of difficult movements quite needed to operate something ● A solution to excessive food purchasing would solve some issues
CFP1	**Computer Vision:** To remedy vision problems and organize data better, we want to automatically read expiration dates on food labels. We tested existing OCR tech at varying angles on different packages, to see if it would succeed.	**Backpack strap:** Double pulley mechanism to reduce by half effort needed. They wanted to find a way helping older adults putting their backpack with ease.	**Stanford:** ● OCR was unreliable at high angles/low contrast text/poor lighting **Tokyo Tech:** ● High friction between textile strap and plastic increased required force greatly	
CFP2	**Lifting Mechanism:** A lifting mechanism could help older adults reach lower items more easily. We tested a hydraulic mechanism to see if there were any problems or quirks in that system. See if it makes reaching lower items easier.	**Weight scaler:** Test a system to measure the weight of groceries put onto a platform, alerting them if it is over a certain threshold. Aimed at making older adults more aware of how much they're purchasing, hence dissuading them from excessive purchases.	**Stanford:** ● Using hydraulics alone made the lifting movement dependent on weight, uneven ● Angle with respect to horizontal changed during lifting ● You would still need to reach down and manually pull up the shelf. **Tokyo Tech:** ● This prototype did not truly answer the need to reduce purchases, as it was not lack of awareness of the amount purchased that caused that	**Stanford:** ● Alternate arrangements of hydraulics would give a better motion profile for our purpose ● Motorized lifting might give a smoother movement overall ● We need to think more about where this would be implemented (e.g. low shelves, refrigerators) because it would affect the desired motion/constraints. **Tokyo Team:** ● Giving people more information about a bad habit does not

			tendency ● Such a system was quite heavy and not easily carried	necessarily change them; it is necessary to address the root cause of a behavior
DH1	**Cooking Instruction System (Projection):** Use a projector to project lifesize images of food onto someone cooking. See what distance a projector would need to be to project an image covering a food preparation/cooking surface, and quality of images on various surfaces including food. Note effect of angle.		**Stanford:** ● Projecting at an angle did not ameliorate viewings conditions ● Projecting vertically is more preferable ● However we need to take into consideration kitchen environments obstacles (fume hood for example)	**Stanford:** ● Increase user-experience in sociability ● Theatre mode: lights, camera recorder, incorporated microphone to communicate ● Implement social aspect (social media) ● System could be expanded to use not only prerecorded videos but live video
DH2	**Cooking Instruction System (User Experience):** Using the setup from last week, prepare a video and teach people to cook. We allowed users to advance to the next step by voice, looping video for each step. Watch how they respond to the video and if they are able to follow the instructions to cook the recipe successfully. See how projection onto cooking surface vs adjacent.		**Stanford:** ● Users felt life sized images made it easier to estimate recipe amounts by ete. ● Projection of food onto food (e.g. image of cooking broccoli onto actual cooking broccoli) was confusing and disrupted ability to see instructions. ● Some cooking information (e.g. heat, ingredient type) was left out of the instructional video. ● Some users did not realize video was looping on each step and misinterpreted directions as a result.	**Stanford:** ● This DarkHorse has to increase sociability by increasing connections between members of a family : teach kids cooking, share cooking instruction with family members far away from each other ● Have an incorporated camera to record may be a way to increase intergenerational contact ● Thermal camera may provide feedback to users with regards to their cooking temperature ● Users may indirectly get temperature info from instructions about food color. Consider using color-based instructions for video