WEEK 1: 9/17/18 - 9/24/18	
Last status report goals:	N/A
Current progress:	— Acquired <u>Programming Robots with ROS.</u> — Turned in Project Proposal draft (9/18). — Went through the peer review and revision process with Project Proposal. — Started backlog of tasks to prepare for scrum/first sprint.
Next status report goals:	— Turn in completed Project Proposal. — Stop worrying about ELFF for the next week. — Go to Grace Hopper and actually enjoy myself because I've dreamed of doing this for 4 years!! — Investigate research projects and sessions at GHC that have some relevance to ELFF and report back with notes. — Have a quick check-in with Larry on Thursday to see how he's doing. — Sign up for ScrumDesk.

Teamwork:	— Larry and I established times for two stand ups per week: Mondays and Thursdays from 12PM-12:15PM.
	— Monday (9/17) stand up:
	  — Discussed what sections of the project proposal we needed to finish before tomorrow's due date.
	  ☑ — AR - Larry: Install ROS on Dave.
	— Thursday (9/20) stand up:
	  ☑ — AR: Meet on Saturday in the lab to work on proposal.
	  — AR - Larry: Give Dave a static IP address.
	  — AR - Mariah: Look through ROS book and decide what parts of it are most relevant and important to read. (In progress.)
	  ☑ — AR - Mariah: Research ROS in order to be able to ask questions/gain insight/talk about the project at OSU on Friday with Bill Smart/robotics students.
	— Monday (9/24) stand up:
	  — AR - Larry: Give Dave a static IP address.
	  — AR - Mariah: ROS book (Resume upon return.)
	  — Update: proposal turned in electronically, Larry will turn in hard copy tomorrow.

WEEK 2: 9/24/18 - 10/1/18	
Last status report goals:	☑ — Turn in completed Project Proposal. ☑ — Stop worrying about ELFF for the next week. ☑ — Go to Grace Hopper and actually enjoy myself because I've dreamed of doing this for 4 years!! (☑) — Investigate research projects and sessions at GHC that have some relevance to ELFF and report back with notes. ☑ — Have a quick check-in with Larry on Thurs to see how he's doing. ☑ — Sign up for ScrumDesk.
Current progress:	— Began familiarizing myself with ScrumDesk interface. — Selected which relevant sections of the ROS book I want to read and take notes on: Chapter 2, 6, and 12 in ROS book (covering ROS basics and examples of robots navigating using computer vision and OpenCV). — Created ELFF repo on GitHub and uploaded weekly status reports. — Note: This week contains Fall Break and exams for both of us (two for me, one for Larry) and I am still trying to catch up from missing six days of classes, so I expect progress to be somewhat minimal during this sprint.
Next status report goals:	— Share my relevant notes with Larry from the sessions on HCI/accessibility/robotics that I attended at GHC and discuss how we can incorporate these thoughts into the design of our gestures. — Have a solid understanding of ScrumDesk UI (how to create and navigate epics, user stories, and tasks). — Read ROS chapters to have a better understanding of how ROS and OpenCV interface with each other, and what our next steps for beginning work on OpenCV are. — Investigate current camera and ensure it is OpenCV compliant. — Determine whether we need any additional parts for the Computer Vision Gesture Recognition module and order immediately if so.

Teamwork:	— Thursday (9/20) stand up:
	    — Happened via text.
	    — Established that user stories are due to Shereen on Tues, 10/2.
	    — Confirmed that no immediate action is needed on my part.
	    — Larry started creating epics, stories, and tasks based on our project proposal dev plan.
	— Monday (10/1) stand up:
	    ☑ — AR - Mariah: ROS book. (Larry noticed some useful chapters.)
	    ☑ — AR - Mariah: Set up project repo on GitHub.
	    ☑ — AR - Mariah: ssh to Dave.
	    — AR: Finalize user stories for tomorrow's capstone class.

WEEK 3: 10/1/18-10/8/18	
Last status report goals:	☑ — Share my relevant notes with Larry from the sessions on HCI/accessibility/robotics that I attended at GHC and discuss how we can incorporate these thoughts into the design of our gestures. ☑ — Have a solid understanding of ScrumDesk UI (how to create and navigate epics, user stories, and tasks). (☒) — Read ROS chapters to have a better understanding of how ROS and OpenCV interface with each other, and what our next steps for beginning work on OpenCV are. ☑ — Investigate current camera and ensure it is OpenCV compliant. (☑) — Determine whether we need any additional parts for the Computer Vision Gesture Recognition module and order immediately if so.
Current progress:	— Investigated OpenCV camera compatibility. Learned that plenty of OpenCV, OpenNI, and Kinect tutorials are available, but no information can be found on the specs of the webcam that came with the robotic car kit. — Decided to configure the pi and USB camera this week as outlined in the instruction manual and see if that works (resolution is >= 720, OpenCV libraries work with it) before spending ~$60.00 on a Kinect adapter. — Discovered AI and Robotics Symposium on 10/23 at OSU. Registered, notified professors, shared with Larry who also registered. — Began reading ROS chapter 2.
Next status report goals:	— Finish chapter 2 (10/8) and read parts of 6 and 12 to have a better understanding of how ROS and OpenCV interface with each other. — Set up next sprint and begin working on tasks. — Be able to add the pi to a wifi network, receive its IP address, log in, and connect the USB camera to it to test it.

Teamwork:	— Thursday (10/4) stand up:
	   — Discussed user stories yet to be completed.
	   — Acknowledged that Week "666" rightfully earns its name.
	— Monday (10/8) stand up:
	   — Shared relevant notes with Larry from GHC — accessibility and left-handedness with gestures.
	   — Determined a plan for dealing with the potential cameras.

WEEK 4: 10/8/18-10/15/18	
Last status report goals:	☑ — Finish chapter 2 (10/8) and read parts of 6 and 12 to have a better understanding of how ROS and OpenCV interface with each other. ☑ — Set up next sprint and begin working on tasks. ☒ — Be able to add the pi to a wifi network, receive its IP address, log in, and connect the USB camera to it to test it.
Current progress:	— Installed Rasbian on pi and connected it to the internet via ethernet, so receiving an IP address wasn't necessary to log in. Currently investigating how to connect it to wi-fi via Pacific's network. — Added to Reading Log with relevant links for this sprint.
Next status report goals:	— Finish sprint tasks. — Add to backlog as I come up with future tasks. — Make a decisions about how we are going to document the commands and configurations we are using w/ software.

Teamwork:	— Wednesday (10/10) sprint planning:
	  — Spent about 45 minutes planning for the second sprint.
	— Thursday (10/11) stand up:
	  — Discussed our questions for Shereen.
	— Thursday (10/11) meeting with Shereen:
	  — Met with Shereen for ~50 minutes to ask questions about how sprints are graded and reviewing our next sprint.
	— Monday (10/15) stand up:
	  — Larry reported that he has gotten the webcam working and capturing video from Dave. He's going to continue investigating a bit into the file extension that saves the video as the best quality.
	  — I reported that I was going to spend the afternoon configuring the raspberry pi.

WEEK 5: 10/15/18-10/22/18	
Last status report goals:	(☒)— Finish sprint tasks —> some are still in progress but will be done by tomorrow. ☑ — Add to backlog as I come up with future tasks. ☑ — Make a decision about how we are going to document the commands and configurations we are using w/ software.
Current progress:	— We created a Research Notes shared google doc to document the versions of the software we're using, IP addresses and passwords, commands/tutorials we've used to install things, etc. — Raspberry pi is connected to wi-fi and we are able to ssh to it: pi@10.2.15.247. — Installed ROS on raspberry pi and have begun implementing a demo. — Currently installing OpenCV on raspberry pi (learned that OpenCV takes 1.5+ hours to compile during installation). Once this is installed, we will run the demos that Larry got running on Dave using OpenCV. — Researched static and dynamic gesture recognition implementations and limitations for two hours.
Next status report goals:	— Attend the AI and Robotics Symposium at OSU on Tuesday to hear about research and current topics in Robotics. — Review and compare notes from the symposium and discuss whether and how we can apply what we learned to ELFF. — Complete Sprint 2 retrospective and Sprint 3 planning. — Learn a lot about OpenCV. — Force myself to take notes on our stand-ups immediately after they happen, because I keep forgetting what was discussed.

Teamwork:	— Thursday (10/18) stand up:
	   — I have no idea what we talked about.
	— Monday (10/22) stand up:
	   — Discussed what we still have left to research.
	   — Finalized logistics of tomorrow's journey to OSU.
	   — Purchased $12.00 parking pass — saved receipt to try to get reimbursed for this through senior project funding at some point.
	   — Hope to plan for Sprint 3 on Wed, but depending on our progress on our Networking assignment (which has taken much more of our time than anticipated), Sprint 3 planning may be delayed until Thursday evening.

WEEK 6: 10/22/18-10/29/18	
Last status report goals:	☑ — Attend the AI and Robotics Symposium at OSU on Tuesday to hear about research and current topics in Robotics. (☒) — Review and compare notes from the symposium and discuss whether and how we can apply what we learned to ELFF. — This is on our sprint 3 as a story, yet to be completed, though. ☑ — Complete Sprint 2 retrospective and Sprint 3 planning. — Learn a lot about OpenCV. ☑ — Force myself to take notes on our stand-ups immediately after they happen, because I keep forgetting what was discussed. — *Success.*
Current progress:	— Finished sprint 2, presented turtle demo on Thursday's demo day. — Planned for sprint 3 and talked to Shereen about how to improve wording for acceptance criteria for "investigation" tasks. — Started reading through Chapter 8 of book discussing ROS/OpenCV.
Next status report goals:	— Continue to familiarize myself with OpenCV; complete a couple of simple demos before I start working/researching more specific APIs for our project. — Spend a little time thinking about usability testing. Sprint tasks: — Review and compare notes from the symposium and discuss whether and how we can apply what we learned to ELFF. — (Finish) investigating Chapter 8 of Mastering ROS for Robotics Programming about interfacing ROS and OpenCV. — Categorize techniques used to programmatically recognize gestures. — (Begin) investigating the performance of these techniques on the Pi.

Teamwork:	— Thursday (10/25) stand up:
	    — Made sure we had everything prepared for our Sprint 2 Demo during capstone.
	    — Discussed the order in which we would demo the acceptance criteria.
	— Thursday (10/25) sprint planning:
	    — Met for an hourish to set up sprint 3 and discuss our questions about our acceptance criteria.
	— Monday (10/29) stand up:
	    — Nothing to report, aside from the fact that we will do work this week.

WEEK 7: 10/29/18-11/5/18	
Last status report goals:	☑ — Continue to familiarize myself with OpenCV; complete a couple of simple demos before I start working/researching more specific APIs for our project. ☑ — Spend a little time thinking about usability testing. Sprint tasks: ☑ — Review and compare notes from the symposium and discuss whether and how we can apply what we learned to ELFF. ☑ — (Finish) investigating Chapter 8 of Mastering ROS for Robotics Programming about interfacing ROS and OpenCV. ☑ — Categorize techniques used to programmatically recognize gestures. ☑ — (Begin) investigating performance of these techniques on the Pi.
Current progress:	— Investigated Chapter 8 of Mastering ROS for Robotics Programming about interfacing ROS and OpenCV. — Wrote up some observations about OSU Symposium. — Resolve versioning issue in virtual environment with Python 2.7 vs Python 3. — Used OpenCV libraries (videoio, imgproc, highgui, video) to perform some operation on collected data — pulling from an existing demo on background subtraction. — Researched methods for static and dynamic gesture recognition to include in report. Read through explanations of various implementations in python and a tutorial in background subtraction using OpenCV in C++. — Implemented a few tutorials with some success; still trying to understand how the code in a couple is supposed to work. Learned tabs are very important in python!

Next status report goals:	— Plan sprint 4 on Tuesday night:
	    — As a developer, I want to store gestures as a data set so that I can use them to recognize gestures.
	    — Something like: Take the research we've compiled on various OpenCV libraries, and the knowledge we have of gesture recognition/OpenCV code, and try to capture and perform operations on our own gestures.

Teamwork:	— Thursday (11/1) stand up and "class":
	  — Shared my questions with Larry about our backlog refinement. He confirmed with Shereen while I continued to add stories to the backlog.
	— Monday (11/5) stand up:
	  — Happened late. Very briefly, in spite of Larry's migraine and my dysfunctional toilet fill valve, discussed what our next sprint will focus on.

WEEK 8: 11/5/18-11/12/18	

Last status report goals:	☑ — Plan sprint 4 on Tuesday night:
	    — As a developer, I want to store gestures as a data set so that I can use them to recognize gestures.
	    — Something like: Take the research we've compiled on various OpenCV libraries, and the knowledge we have of gesture recognition/OpenCV code, and try to capture and perform operations on our own gestures.

Current progress:	— Planned sprint 4, demoed sprint 3, began sprint 4. — Installed Eclipse on Dave. — Skimmed Hand and Mind book; learned a bit about how gestures are classified (iconics, metaphorics, etc.). While this might be useful for our final report or usability studies, it's a lot of technical info that is interesting but not relevant enough to spend much time reading in depth. — Conducted preliminary google search on common navigational gestures people use. — New keywords: vision-based gesture recognition, touchless natural user interface — Started following OpenCV tutorial to code a program in C++ that contours an image of my hand. Need to finish this and then replace the static image with a video of my hand and have contouring still work.

Next status report goals:	— Finish sprint 4??
	    — Talk to Girlfriend Hannah about ASL and gestures.
	    — Define some set of gestures.
	    — Write a program that is able to detect and classify at least two different gestures.
	— Reevaluate workload and life priorities in relation to upcoming deadlines of the grad school variety and how this impacts capstone project.

Teamwork:	— Thursday (11/8) stand up:
	    — Made sure we were prepared for demo day.
	    — Agreed upon working with a peace sign gesture for sprint demo purposes.
	— Monday (11/12) stand up:
	    — Larry reported on his skimming of the Hand and Mind book — didn't yield any particularly interesting results; I said I would look at it.
	    — I reported that I was going to work today/tonight on capstone.

WEEK 9: 11/12/18-11/19/18	

Last status report goals:	☑ — Finish sprint 4??
	   ☑ — Talk to Girlfriend Hannah about ASL and gestures.
	   ☑ — Define some set of gestures.
	  (☑) — Write a program that is able to detect and classify at least two different gestures. (I mean, Larry found and edited an existing program that does this in order to make it work, mostly.)
	☑ — Reevaluate workload and life priorities in relation to upcoming deadlines of the grad school variety and how this impacts capstone project. (Reduced hours this sprint is a result of this, for my own sanity, as grad school app deadlines and the GRE approach. Accepted the fact that a lot more senior project work, on my part, will need to be done after December 15th and in January once things calm down a little. Will drop my winter term class if need be to allow for more capstone work.)

Current progress:	— Agreed on a set of gestures for turn left/right, drive, reverse, stop, and pick up. — Talked to Hannah B. about our proposed gestures and received helpful feedback. She is willing to usability test in the future or to contact a Deaf person for us. Recorded conversation. — Wrote C++ code using OpenCV to capture a frame and perform image pre-processing on it: convert it to grayscale, blur it, and threshold it using 5 different operations to see if hand gesture can be segmented from the background. Images are saved at each step. May need to apply this knowledge to existing gesture recognition demo to improve performance.
Next status report goals:	— Plan sprint 5 on Tuesday night: assignment & build robot. — Work on Project Report and Presentation to have draft for 11/27, next Tuesday. — Don't start building the robot until Sunday/Monday, *after* the GRE.

Teamwork:	— Thursday (11/15) stand up:
	  — Status updates: we're both working on code.
	  — Discussed setting up a winter release. After the semester ends, we
	    will do this in order to continue tracking our work until February.
	  — Brief discussion about questions to ask Hannah Bachelor in
	    conversation about ASL, gestures, and creating a persona for
	    someone from the Deaf community. Need to come up with
	    gesture set before WICSgiving.
	  — Discussed next sprint: would like to build the robot and work on
	    presentation and report, then work on software again over winter
	    break.
	— Monday (11/19) stand up:
	  — Reported that I had started a document for our Fall Project Report,
	    and began copying relevant sections from Project Proposal in.
	  — Demoed my code and the resulting thresholded images for Larry.
	  — We will set up Sprint 5 tomorrow, after Demo Day.

WEEK 10: 11/19/18-11/26/18	
Last status report goals:	☑ — Plan sprint 5 on Tuesday night: assignment & build robot. ☑ — Work on Project Report and Presentation to have draft for 11/27, next Tuesday. ☑ — Don't start building the robot until Sunday/Monday, *after* the GRE.
Current progress:	— Worked on drafts of things (report, presentation) due this week. — On Sunday, Larry and I spent about 2.5 hours assembling the back half of the robotic car.
Next status report goals:	— Finish assembling the front half of the car. — Finish our fall semester report and presentation. — Figure out when we are going to practice our presentation. — Finish reflection.

Teamwork:	— Thursday (11/22) stand up:
	   — Larry and I both simultaneously texted each other to acknowledge our phones' reminders of the stand-up that we were not going to have, which was pretty great.
	 — Monday (11/26) stand up:
	   — We both communicated that we'd be working on the draft of the due tomorrow and the presentation due Thursday. We'll resume building the robot at some point this week; probably Wednesday.

WEEK 11: 11/26/18-12/3/18	
Last status report goals:	☑ — Finish assembling the front half of the car. (☑) — Finish [a draft of] our fall semester report and presentation. (Will be done by tomorrow's demo.) ☑ — Figure out when we are going to practice our presentation. ☑ — Finish reflection.
Current progress:	— Car is built and functions. Motors need to be calibrated as outlined in instructions, when we have a chance. Also need to reconnect it to wi-fi. — Working on a couple components of the report/presentation that need to be finished/edited.
Next status report goals:	— Get feedback on report/presentation. — Complete and print final copies of report and presentation. — Practice presentation.

Teamwork:	— Thursday (11/29) stand up:
	  — We will keep the same stand up meeting times for next semester.
	  — We plan to practice our presentation on Thursday afternoon and Sunday.
	  — Mariah talked to Shereen to get her availability for the week. Determined Thursday afternoon or Friday afternoon will work best for us all. Will prepare questions/sections to focus feedback on.
	— Monday (12/4) stand up:
	  — Discussed what needs to be completed on the draft of the report before the sprint ends.
	  — Established that after Friday 11:30am finals, we'd like to meet with Shereen.
	  — Discussed that we'll skip the Dec 4-18th sprint and begin our winter release starting Dec 18th.
	  — Discussed that we will continue to write and send weekly updates while sprints are in progress.

WEEK 12: 12/17/18-12/24/18	
Last status report goals:	☑ — Get feedback on report/presentation. ☑ — Complete and print final copies of report and presentation. ☑ — Practice presentation. Goals from 12/10-12/17 status report that I did not end up sending: ☑ — Set up winter release. (Next sprint will run Dec 18 - Jan 1, and therefore next status report will be Dec 24th.) ☑ — Have a clear conversation about goals for winter release. ☑ — Begin working on next sprint.
Current progress:	— Final report and presentation completed and submitted at the end of the semester. — Talked to Shereen to receive feedback about fall semester report/presentation, then shared feedback with Larry. — Discussed winter sprint plan + "lazy loading" scrum for winter break/term with Larry. — Created a Fusion 360 free student account for 3D printing, downloaded and installed CAD software. — Calibrated pi's motors and test drove ELFF with provided navigation programs (client_App.py/tcp_server.py). — Began researching RGIO and how to control GPIO pins on pi using ROS. — Read ROS book chapter 15 (interfacing your own sensors with ROS), took notes.
Next status report goals:	— Study the existing client/server API code to understand how RGPIO and Python are currently used to control the servos and move the car. — Continue researching and read documentation/walk-throughs on controlling GPIO pins on pi using ROS. — Go through a couple useful Fusion360/Autodesk practice tutorials provided to familiarize self with the software. — If it's feasible to get all ELFF components working on home wireless network, write simple publisher/subscriber ROS nodes to interface with a servo on the pi.
Teamwork:	— Larry communicated that ELFF repo is now up-to-date. — Larry and I set up a sprint and had a couple of informal updates for each other as needed.

WEEK 13: 12/24/18-12/31/18	
Last status report goals:	[?] Study the existing client/server API code to understand how RGPIO and Python are currently used to control the servos and move the car. ☑ Continue researching and read documentation/walk-throughs on controlling GPIO pins on pi using ROS. ☑ Go through a couple useful Fusion360/Autodesk practice tutorials provided to familiarize self with the software. ☒ If it's feasible to get all ELFF components working on home wireless network, write simple publisher/subscriber ROS nodes to interface with a servo on the pi. (Too ambitious for the Holiday Sprint.)
Current progress:	— Found another Autodesk software (Tinkercad) for 3D design. Investigated differences between Autodesk Fusion 360 and Tinkercad software and wrote a brief comparison in shared Research Notes google doc. Still unsure which software is best to use. — There are many more files (python) associated with controlling the car than I originally thought… started working my way through them and will continue to do so… — Technically, all our acceptance criteria for Sprint 6 has been met, but that's partially because one of stories had very vague criteria — must be improved in the future, especially as hardware and software components operating in this project get more complex.
Next status report goals:	SCOOPER: — Research methods of attaching a scooper to the robot body and servos that can lower the scooper. — Create a draft of a scooper in at least one of the CAD softwares. — Re-locate the initial robotic scooper part that we found online early in the semester. ROS: — Study the existing client/server API code to understand how RGPIO and Python are currently used to control the servos and move the car. — Continue reading relevant book chapters and reading through tutorials related to ROS and how to write software to control your own motors.
Teamwork:	Not for the Holiday Sprint. An update will be in order tomorrow.