Project Milestone Report

Project Title: Bird Nests		Report Date: May 4th, 2015		
Milestones To Date	Description of Deliverables	Due Date	Completion Time/Status	Comments
Get images from NGB camera	NGB images (e4e.ucsd.edu/eric/san_elijo.tar.gz)	End of WK 4	WK 4	Provided by Eric
Understand how to generate NDVI image	NDVI images (See WK4 Update https://github.com/shl202/BirdNest/wiki/Weekly-Updates)	End of WK 4	End of WK 4	Not satisfactory, binary image from threshold the NDVI image returns ~50% white and ~50% black
Implement NIR	NDVI Visualization of search area for ecologists.	End of WK 6	Pending	Since the NDVI images is not satisfactory, we decide to use some machine learning algorithm to further reduce our search area. This will probably not be implemented by the end of week 6 and might flow into our other milestones
New: Approach to further reduce search area.	Methodology Proposal (See WK5 Update https://github.com/shl202/BirdNest/wiki/Weekly-Updates)	End of WK 5	End of WK 5	See Week 5 update on our wiki page.
New: Collect Training Data	Classified training data for water, rock, grass etc.	End of WK 6	Pending	We have about 100 images of rock and leaves from the images Eric provided, but we need more data for water
New: Try Classification by texture and train.	Visualization of identified terrain	End of WK 6	Pending	Work in progress, seems to be the hardest part of our project so far...

New: Pipeline our results to eliminate non-bird-nests	A program that combine our classification results	End of WK 6	Pending	Haven't started as of now, might be delayed.
Get and analyze thermal images	Thermal images	End of WK 7	Not started	
Integrate thermal analysis into our search area	Report of how thermal images helps	End of WK 8	Not started	
Acoustic impact analysis	Acoustic impact analysis	End of WK 8	Not started	
Put everything together	Demo on raw images → useful information	End of WK 9	Not started	

Description of Change:

In our project specification (we were told that it is not very specific), we said we would have implementation of our Near IR camera by the end of week 6. So, what we meant by that is we will have our algorithm use the NDVI (Normalized Difference Vegetation Index) to generate NDVI images to tell apart the living and dead materials from our camera images. Basing on that, we would find a way to tell the ecologists where to look. By the end of week 4, we generated our NDVI image and we did a threshold on the image in an attempt to isolate the dead material, but the result was rather disappointing. The binary images was about 50% black and 50% white (See week 4 update on our Wiki page for our sample image). Not satisfied with our results, we decided to revise our approach. We agreed on using machine learning algorithm to find non-bird-nest objects, so that we can further eliminate those from the picture, thus reducing the search area more (See week 5 update on our Wiki page for the proposal). Base on that, we added a few additional milestones for the weeks 5-7, such as collecting training data, implementing classification method and eliminating non-bird-nest objects. We are hoping to complete our analysis of Near IR camera images by the end of week 7 as oppose to our original proposal of end of week 6.

Individual Member Plan:

	Cloud	Mike
WK6	Test some ML algorithms with existing data set.	Extract and classify images from images we've collected
	Train to detect water, rock, grass, etc.	Write code for pipelining the results (probably work with binary image)
WK7	Wrap up Near IR analysis with Mike	Wrap up Near IR analysis with Cloud
	Wrap up Near IR analysis with Mike	Start on acoustic impact research
WK8	Start on working thermal camera	Finish up acoustic impact report
	Integral information from thermal camera to further enhance the result.	Help Cloud with integrating Near IR and Far IR info.
WK9	Fine Tune	Fine Tune
	Prepare Demo	Prepare Demo
WK10	Present	Present