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This week, we collected additional images for training and testing. Our training set now contains 192 images (12 for each camera in each position, 12 * 8 * 2 = 192). We also improved our testing capabilities by using MATLAB to generate a confusion matrix for many questions at once. We tested 64 daytime images (4 for each camera in each position, 4 * 8 * 2 = 64) and 64 nighttime images. The daytime images had an 80% accuracy rate, while the nighttime images had just a 17% accuracy rate. This is not surprising for several reasons. 1) We didn't train on any nighttime images… but we will soon. 2) The nighttime images were taken on a rainy night.

With these initial results, we have an excellent baseline for our primary research question: What is the best way to combine the images from the front- and rear-facing cameras to achieve the best prediction? We have already identified three ways to combine the images. Next week, will begin to implement a programmatic approach to evaluating these three ideas.

The confusion matrix for both test sets are included in the following pages. Our work is available at www.github.com/wdickerson/locate.

Daytime:

KNOWN	NE_MAIN_S	NE_MAIN_W	NE_SELF_S	NE_SELF_W	NW_MAIN_E	NW_MAIN_S	NW_SELF_E	NW_SELF_S	SE_MAIN_N	SE_MAIN_W	SE_SELF_N	SE_SELF_W	SW_MAIN_E	SW_MAIN_N	SW_SELF_E	SW_SELF_N
NE_MAIN_S	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE_MAIN_W	0.25	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
NE_SELF_S	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE_SELF_W	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW_MAIN_E	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW_MAIN_S	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW_SELF_E	0.25	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW_SELF_S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE_MAIN_N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE_MAIN_W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.75	0.00	0.00	0.00	0.00	0.00	0.00
SE_SELF_N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.00
SE_SELF_W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.00
SW_MAIN_E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
SW_MAIN_N	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.25	0.00	0.00
SW_SELF_E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
SW_SELF_N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00

* Average Accuracy is 0.80.

Nightime:

KNOWN	NE_MAIN_S	NE_MAIN_W	NE_SELF_S	NE_SELF_W	NW_MAIN_E	NW_MAIN_S	NW_SELF_E	NW_SELF_S	SE_MAIN_N	SE_MAIN_W	SE_SELF_N	SE_SELF_W	SW_MAIN_E	SW_MAIN_N	SW_SELF_E	SW_SELF_N
NE_MAIN_S	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE_MAIN_W	0.00	0.50	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
NE_SELF_S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
NE_SELF_W	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.20	0.00
NW_MAIN_E	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
NW_MAIN_S	0.50	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
NW_SELF_E	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00
NW_SELF_S	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE_MAIN_N	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00
SE_MAIN_W	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.00	0.00	0.00	0.00
SE_SELF_N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
SE_SELF_W	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00
SW_MAIN_E	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW_MAIN_N	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.00	0.00	0.00	0.00
SW_SELF_E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.50	0.00
SW_SELF_N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00

* Average Accuracy is 0.17.