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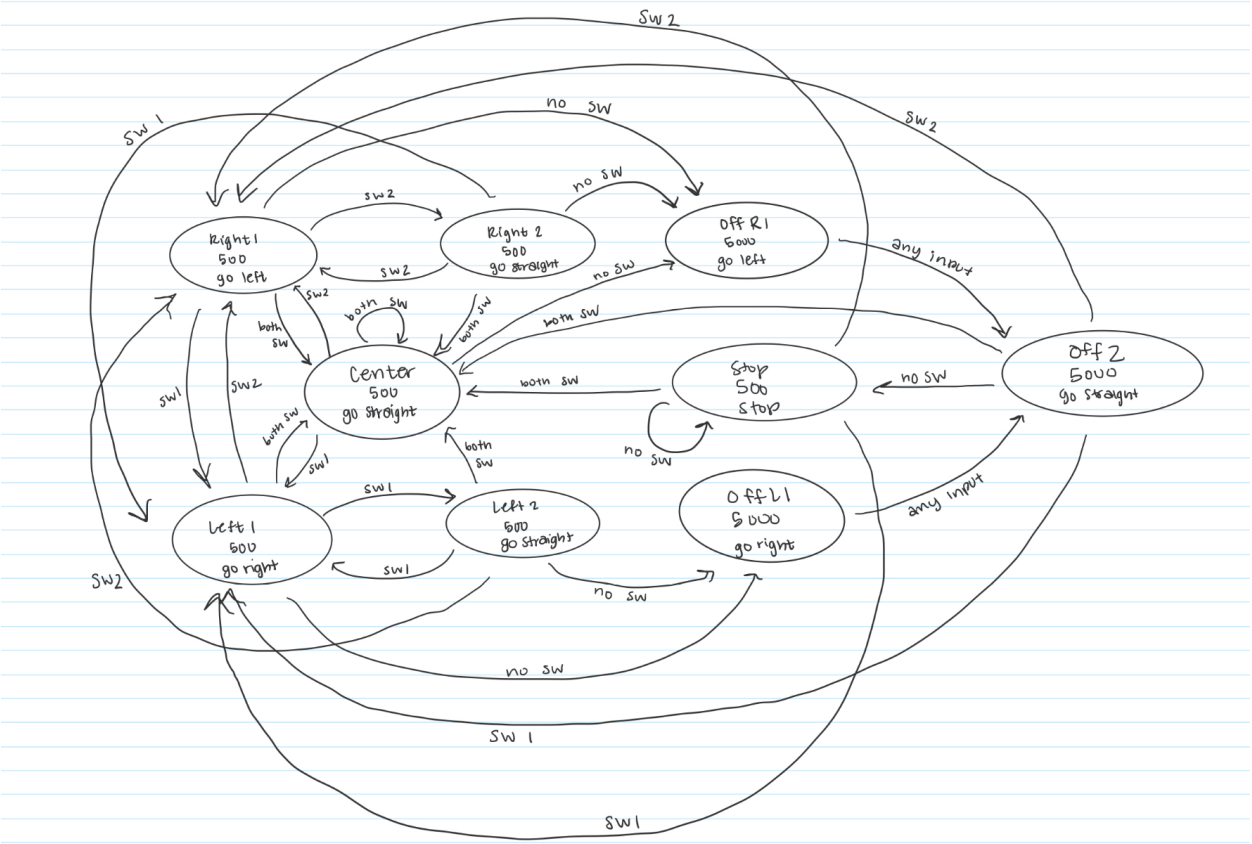
ECE1188
Assignment 4

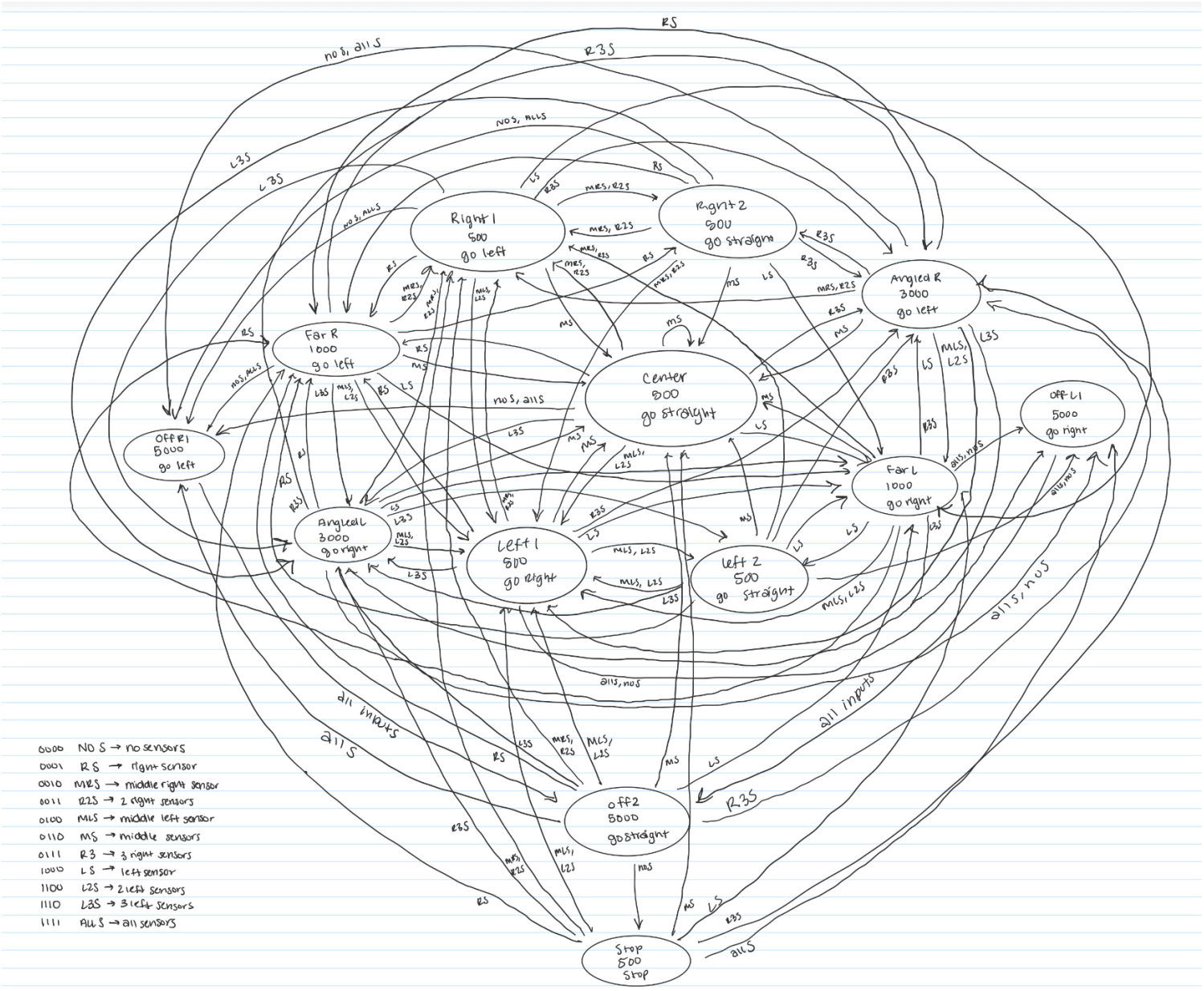
Finite State Machine Diagram from 7.4.2:



Corresponding State Transition Table:

State	Motor	no SW (00)	SW1 (01)	SW2 (10)	both SW (11)
Center	go straight (1,1)	off R1	Left 1	Right 1	center
Left 1	go right (1,0)	off L1	Left 2	Right 1	Center
Left 2	go straight (1,1)	Off L1	Left 1	Right 1	Center
Off L1	go right (1,0)	Off 2	Off 2	off 2	off 2
Off 2	go straight (1,1)	Stop	Left 1	Right 1	center
Stop	stop (0,0)	Stop	Left 1	Right 1	center
Off R1	go left (0,1)	off 2	off 2	off 2	off 2
Right 1	go left (0,1)	off R1	Left 1	Right 2	center
Right 2	go left (0,1)	off R1	Left 1	Right 1	center

Finite State Machine with Sensors (4-bit input):



At first glance, I know this looks messy. If I had time to redo this I would color code each input line to make it easier to read. I made it as neat as I possibly could but this took hours and I couldn't redo it :(the table on the next page is much easier to make sense of since there are just so many lines here.

Corresponding State Transition Table:

State	Motor	NOS (0000)	RS (0001)	MRS (0010)	R2S (0011)	MLS (0100)	MS (0110)	R3S (0111)	LS (1000)	L2S (1100)	L3S (1110)	ALLS (1111)
center	go straight (1,1)	offR1	FarR	Right1	Right1	Left1	center	AngledR	FarL	Left1	AngledL	offR1
Right1	go left (0,1)	offR1	FarR	Right2	Right2	Left1	center	AngledR	FarL	Left1	AngledL	offR1
Right2	go straight (1,1)	offR1	FarR	Right1	Right1	Left1	center	AngledR	FarL	Left1	AngledL	offR1
FarR	go left (0,1)	offR1	Right2	Right1	Right1	Left1	Center	AngledR	FarL	Left1	AngledL	offR1
AngledR	go left (0,1)	offR1	FarR	Right1	Right1	Left1	Center	Right2	FarL	Left1	AngledL	offR1
offR1	go left (0,1)	off2	off2	off2	off2	off2	off2	off2	off2	off2	off2	off2
off2	go straight (1,1)	STOP	FarR	Right1	Right1	Left1	center	AngledR	FarL	Left1	AngledL	offR1
offL1	go right (1,0)	off2	off2	off2	off2	off2	off2	off2	off2	off2	off2	off2
AngledL	go right (1,0)	offL1	FarR	Right1	Right1	Left1	center	AngledR	FarL	Left1	Left2	offL1
FarL	go right (1,0)	offL1	FarR	Right1	Right1	LCft1	center	AngledR	Left2	Left1	AngledL	offL1
Left2	go straight (1,1)	offL1	FarR	Right1	Right1	Left1	center	AngledR	FarL	Left1	AngledL	offL1
Left1	go right (1,0)	offL1	FarR	Right1	Right1	Left2	center	AngledR	FarL	Left2	AngledL	offL1
Stop	Stop (0,0)	Stop	FarR	Right1	Right1	Left1	Center	AngledR	FarL	Left1	AngledL	offL1