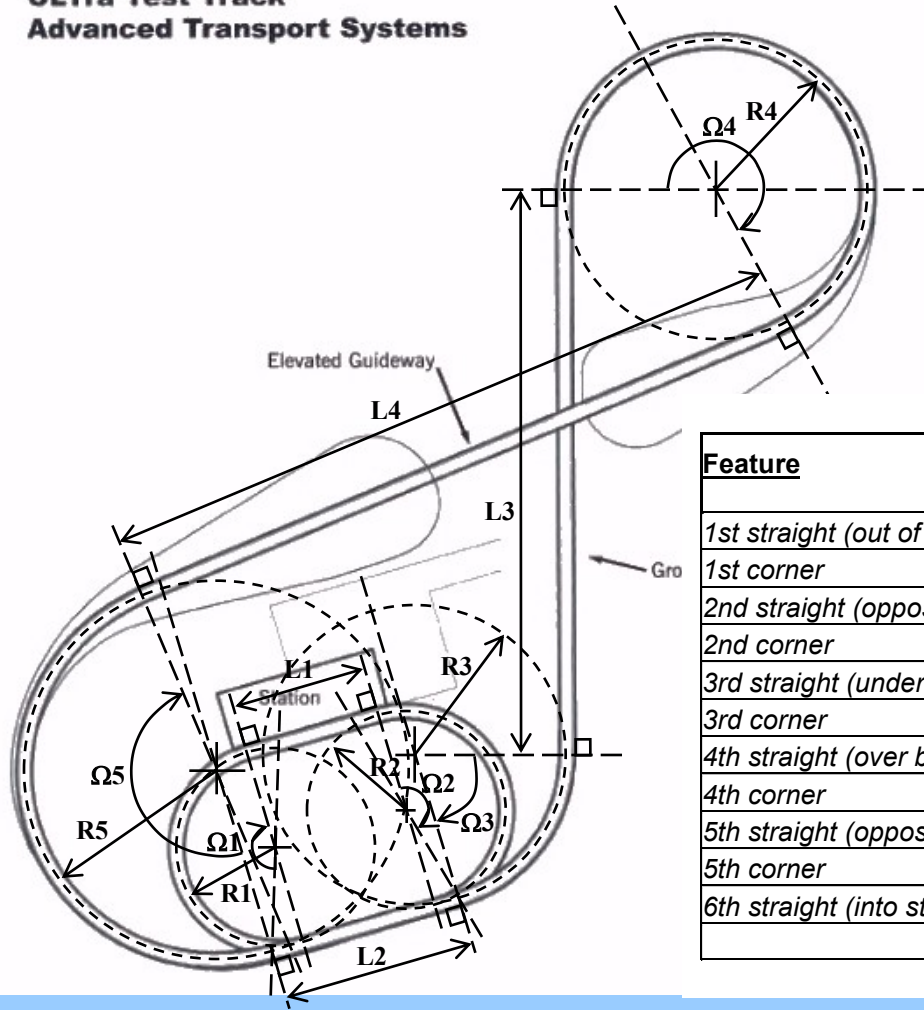


# Sistemas Inteligentes, Proyecto final



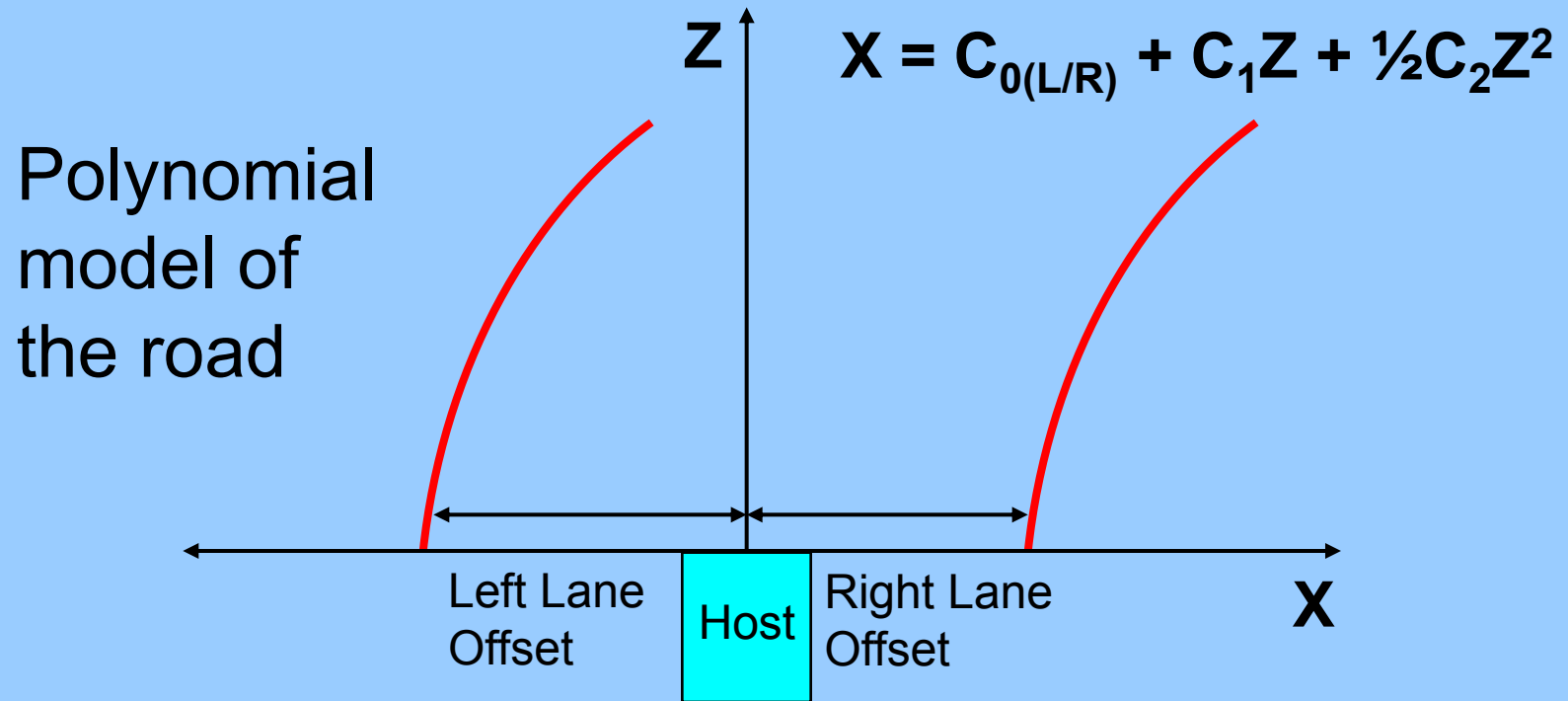
# ULTra test track data layout

## ULTra Test Track Advanced Transport Systems



Feature	Length [m]	Width [m]	Radius [m]	Curvature [rad/m]	Angle [deg]
1st straight (out of station)	11	Σ	1.8		
1st corner	63	74	1.84	20	0.05
2nd straight (opposite station)	31	105	1.65		
2nd corner	39	144	1.78	30	0.0333
3rd straight (under bridge)	112	256	1.6		
3rd corner	129.5	385.5	1.79	30	0.0333
4th straight (over bridge)	138	523.5	1.59		
4th corner	113.5	637	1.74	37.5	0.0267
5th straight (opposite station)	34	671	1.65		
5th corner	63	734	1.84	20	0.05
6th straight (into station)	15	749	1.75		
	Σ	749			

# Coefficient based guideway data fusion

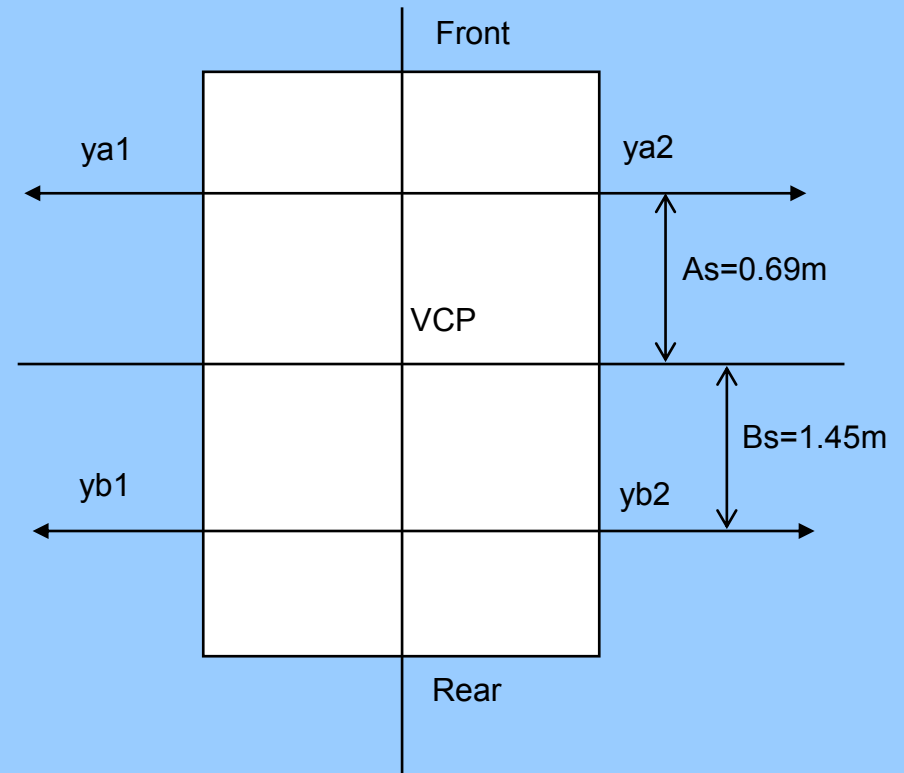


$C_{0(L/R)}$  = Left and right lane offsets

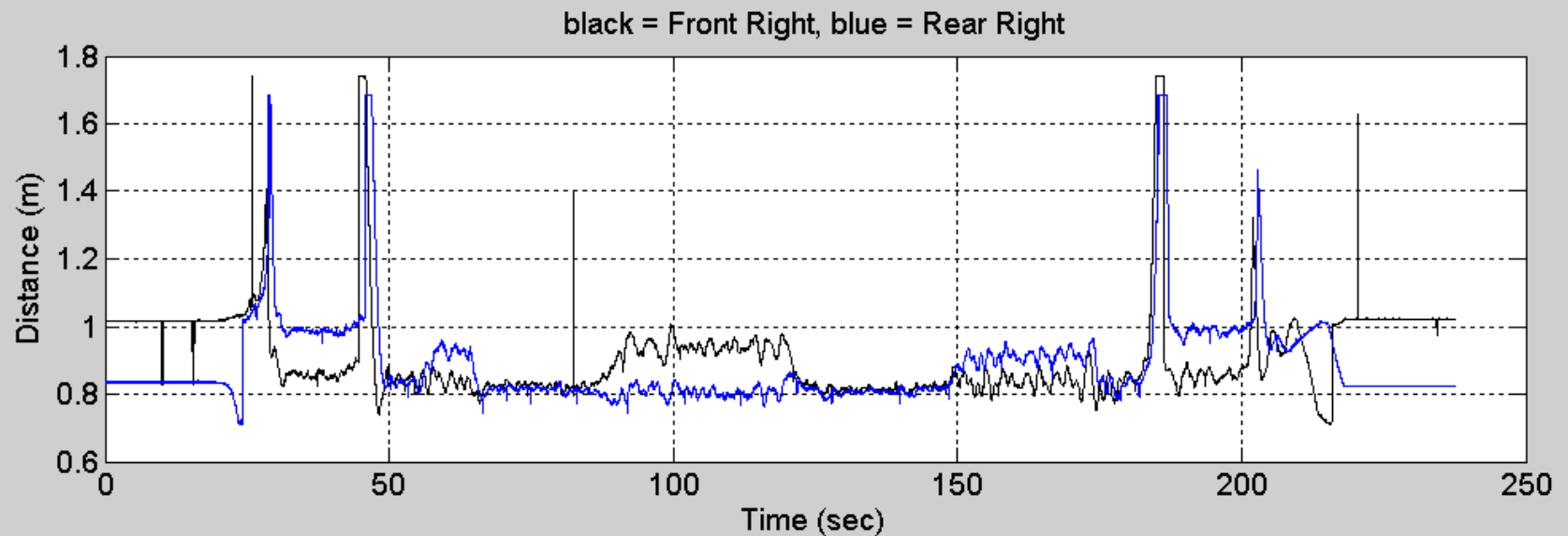
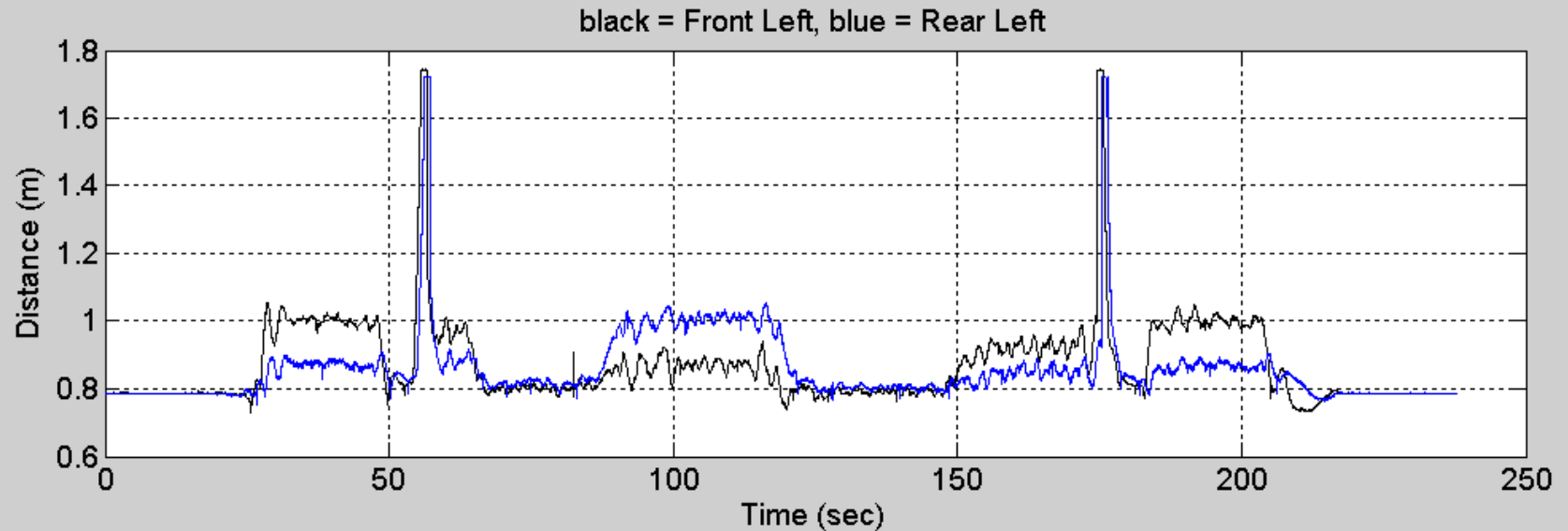
$C_1$  = Heading angle in radians

$C_2$  = Curvature of the guideway

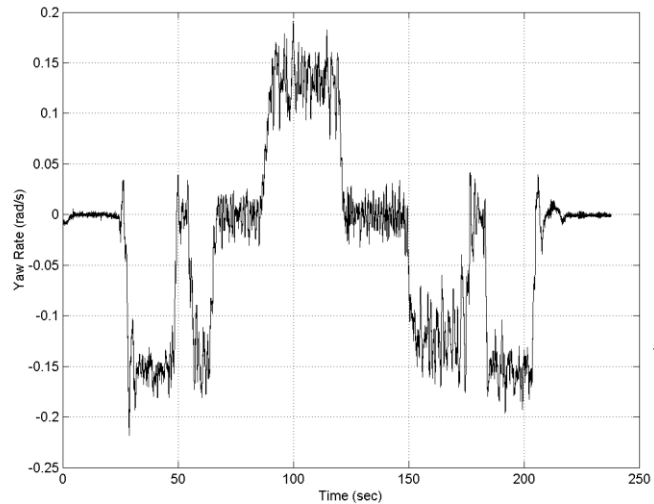




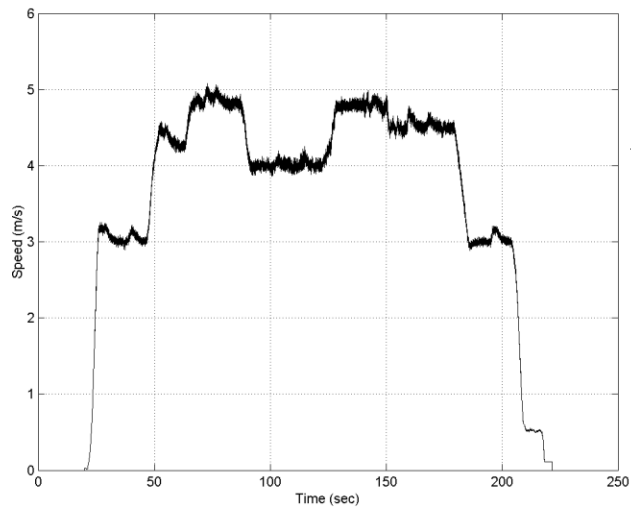
# Ultrasonic Sensors Data



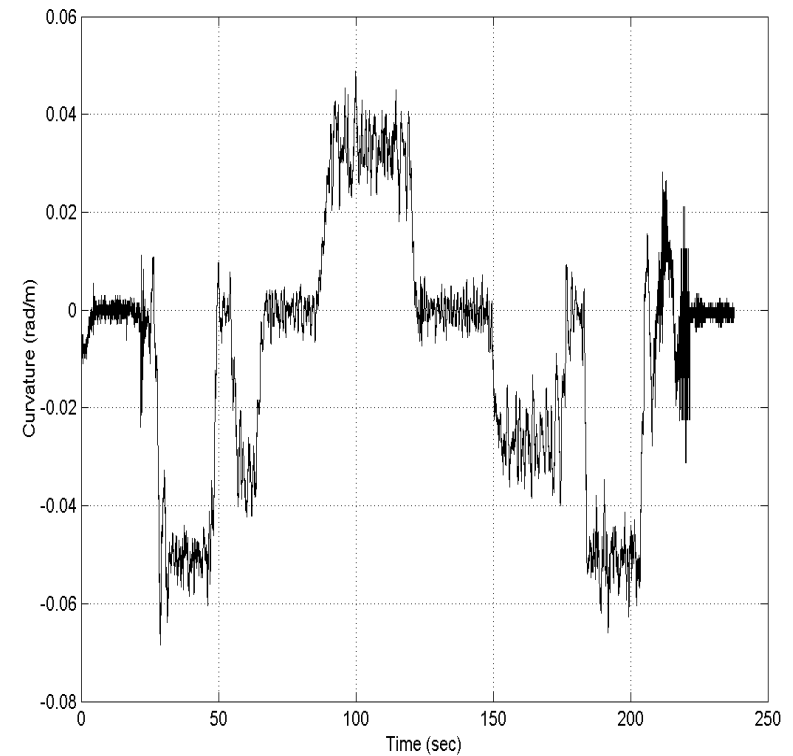
# Curvature Estimation Based on the Vehicle's Dynamics



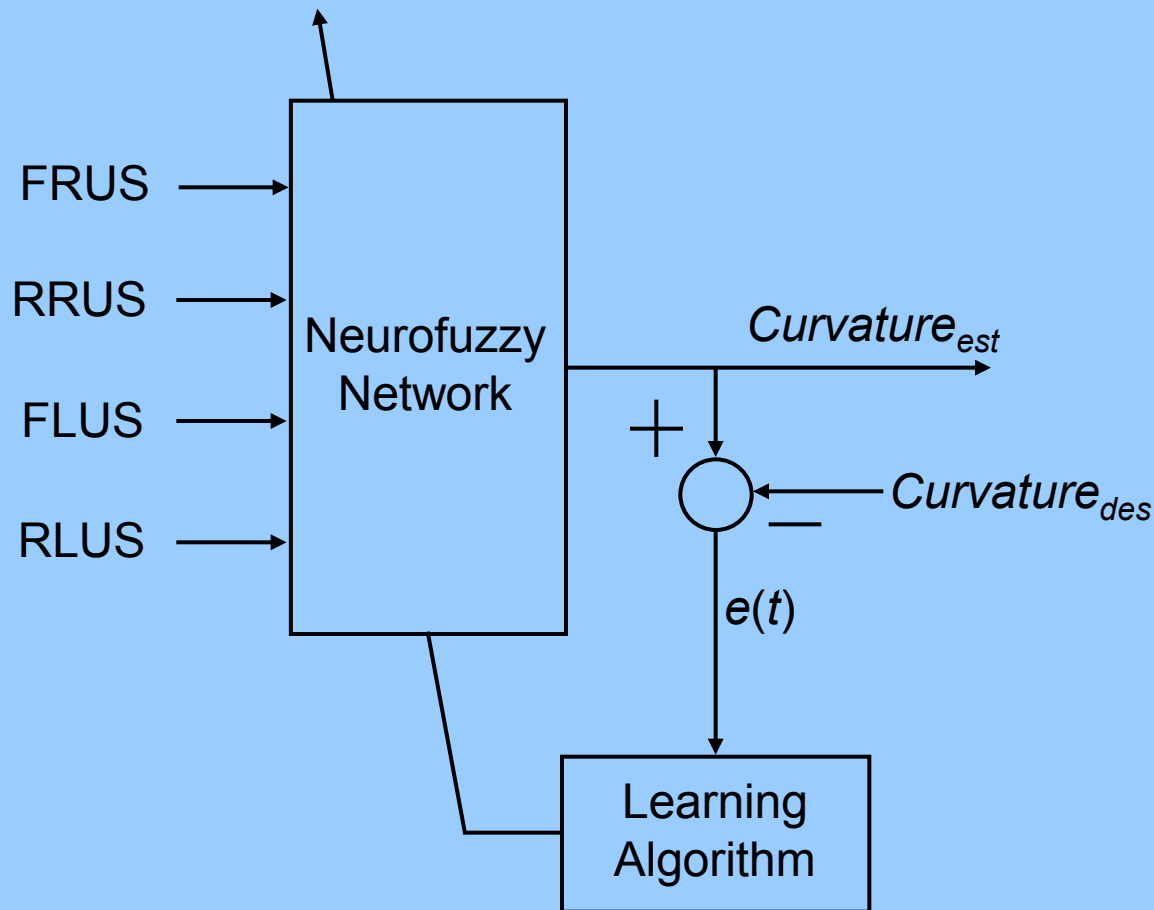
$$\frac{\omega}{V} =$$



## Curvature

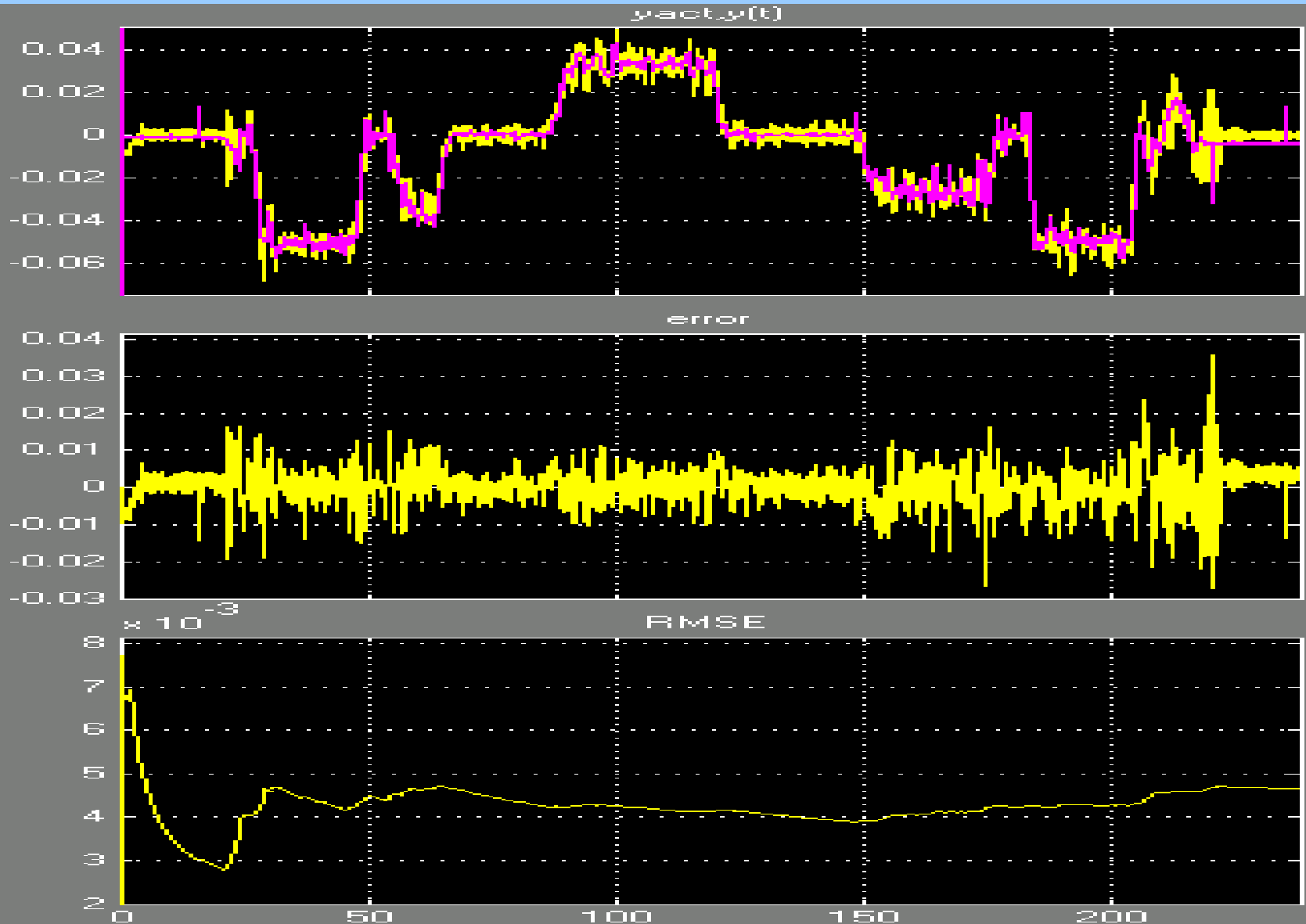


# Neurofuzzy network training 1



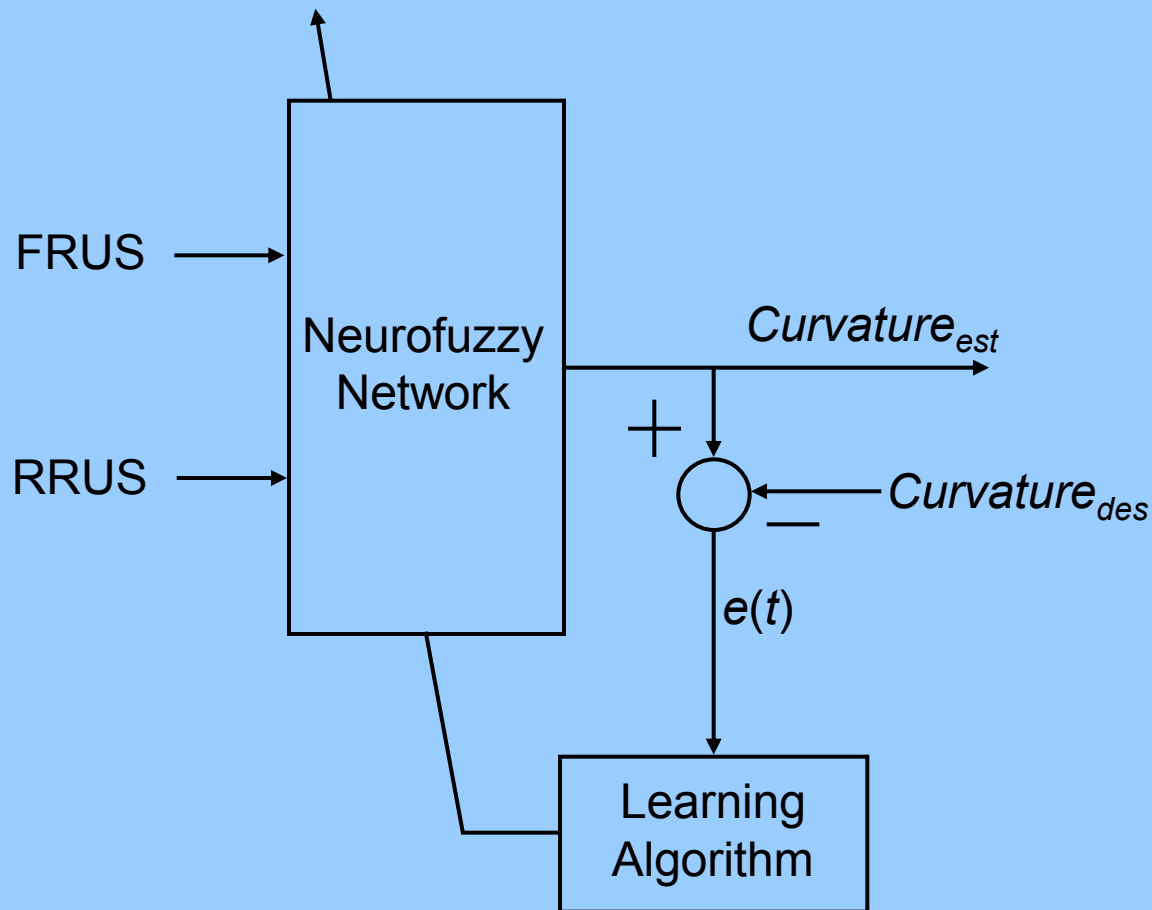
Training data	ATS
First loop with moving vehicle in front	
Second loop with moving vehicle in front	
Third loop without moving vehicle in front [LED and ultrasonic sensors only]	test1
Fourth loop without moving vehicle in front [erased]	test2
Fifth loop without moving vehicle in front	test3
Sixth loop without moving vehicle in front	test4

# Neurofuzzy Network Validation 1





# Neurofuzzy network training 2



Training data	ATS
First loop with moving vehicle in front	
Second loop with moving vehicle in front	
Third loop without moving vehicle in front [LED and ultrasonic sensors only]	test1
Fourth loop without moving vehicle in front [erased]	test2
Fifth loop without moving vehicle in front	test3
Sixth loop without moving vehicle in front	test4

# Neurofuzzy Network Validation 2

