Class Diagram

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Ishan Patel
UID: 116169103

Nakul Patel
UID: 116334877

Suyash Yeotikar

getKp	getKi getKd	setKp	setKi	setKd	getControllerOutput	resetErrors
Return the 2X3 matrix of	getKi getKd Return the 2X3 matrix of Kd gains Return the 2X3 matrix of Kd gains	Check if the elements of input Kp matrix are valid Yes No Store the gains and return true Return false	Check if the elements of input Ki matrix are valid Yes No Return false	Check if the elements of input Kd matrix are valid Yes No Store the gains and return true Return false	Implement getControllerOutput() method with current and target states as parameters. The states are x-coordinate, y-coordinate and heading angle theta. Inside getControllerOutput() method calculate the current error as difference of the current and target states and store it in current error matrix. Also, calculate the error difference as difference of the current error and last error and store it in a 3X1 matrix. Also, calculate the error sum as sum of the current error and last error sum and store it in error sum matrix. Calculate velocity and steering angle using the error, error difference and error sum matrices calculated above and multipy with Kp,Ki and Kd gains matrices obtained from user. Update the last error matrix.	Reset the errors to zero