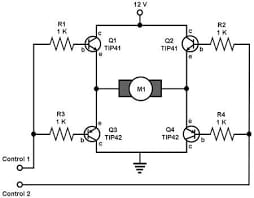
Done

1. A basic circuit for the circuit is implemented.
   1. Instrumentation Amplifier for taking data from the sensors.
   2. PID circuit
   3. Motor Controller
2. ICs are decided.
3. Have implemented the Proportional circuit, integrator and differentiator in simulation. (Simulation file is included in Simulations Folder)

A diagram of a circuit

Description automatically generated

Needs to do

1. Have to simulate Motor Driver circuit. (When Control1=Varying Voltage and Control2=Varying Voltage M1 motor should rotate in one direction (speed have to change according to the varying voltage) and vise versa)
2. Must get familiarized (do a research) with how the PID tuning process works and what is the theory and concepts behind that.
3. And for the distance measurement the only option we have right now is SharpIR sensors. Drawback of the sharp IR sensor is minimum measurement it can do is 10cm, so the width of the road therefore will have to be minimum [20cm+the width of our robot] (And have to think about how are we going to position the sensors as well. The width of the road will change according to that). And that is not going to look very nice. So we have to find a distance measurement sensor which can measure at least a minimum distance of 5cm. The only requirement of the sensor is that it should output a voltage value which is proportional to the distance it is measuring. Or we have to come up with an alternative to reduce the width of the road while using SharpIR sensors.

Updated Speed Controller

If we take the x as the distance error to the front obstacle from the car. X is proportional to the speed. And therefore the oscilation is greater when x is large and fewer when x is small. Therefore we need to Take into account the error as well to determine the speed not only x. Error should be inversely propotional to the speed. Therefore eqn should be like this.

Speed = x + 1/E can not

Speed = x/E cannot

Speed = x – kE (cannot)

Speed = x – xE (0<E<k<1)

So the error needs to standardized to 0<E<1

So E function will be:

E>k : Then E=K

E<K: then E = E

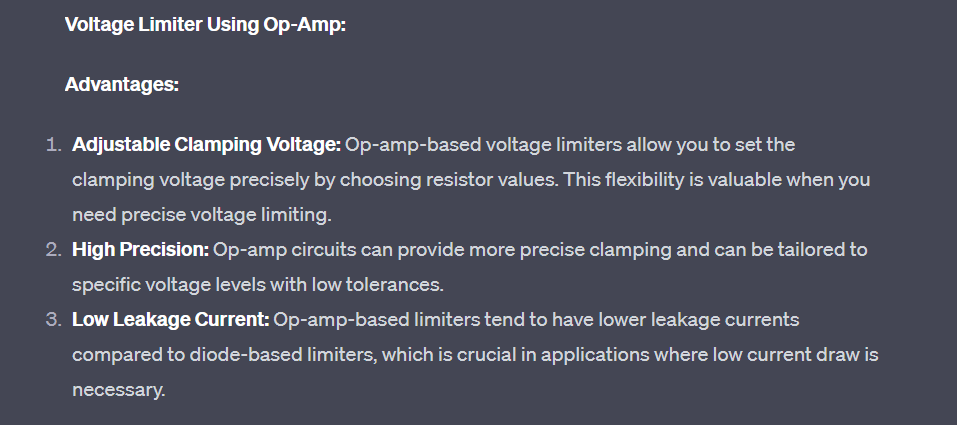
So a Voltage Limiter is required. A 0.7V si Diode would be great.

A flusher for the intergrator. Manual neceassry. Auto have to think about it.

Check bandwidth of the opamp for 20KHZ PWM signal

Why 20Khz PWM?

And I mistakenly interchange the +Vs and -Vs of the power supply which burned 2 of the opamps. So we are gonna need to add something to prevent that to the SMD.



A screenshot of a computer

Description automatically generated