

```

232 OV = throttle; //currently throttle referenced, need to get in speed referenced??
233 IV = (Ri/(Ri+Lr))*OV;
234
235 #if DEBUG
236     Serial.print("OV = ");
237     Serial.print(OV);
238     Serial.print(".....IV = ");
239     Serial.println(IV);
240 #endif
241
242 idealDiff = ((OV - IV)/OV);
243
244 #if DEBUG
245     Serial.print("Weighted difference of velocities = ");
246     Serial.println(idealDiff);
247 #endif
248
249 // INSERT PI CONTROL
250 error = idealDiff - rpmDifference;
251
252 #if DEBUG
253     Serial.print("Error (calculated)");
254     Serial.println(error);
255 #endif
256
257 dT = loopEnd - loopStart;
258 dT = dT/(1000*1000);
259 //dT = 1;
260 control = (Kp*error)+(Ki*(((error+errorPrev)/2)*dT+controlPrev))+(Kd*((error-errorPrev)/dT));
261
262 #if DEBUG
263     Serial.print("deltaTime = ");
264     Serial.println(dT);
265     Serial.print("Control (calculated) = ");
266     Serial.println(control);
267 #endif
268
269 controlApplied = control;
270
271 if(steerDifference < leftSteerBuffer){
272     throttle_in_right = throttle;
273     throttle_in_left = throttle - control; // plus or minus control???
274 } else if(steerDifference > rightSteerBuffer){
275     throttle_in_right = throttle - control; // plus or minus control???
276     throttle_in_left = throttle;
277 } else {
278     throttle_in_right = throttle;
279     throttle_in_left = throttle;
280 }
281
282 #if DEBUG
283     Serial.print("Throttle (right calculated) = ");
284     Serial.println(throttle_in_right);
285     Serial.print("Throttle (left calculated) = ");
286     Serial.println(throttle_in_left);
287 #endif
288
289 errorPrev = error;
290 controlPrev = control;
291 steerLast = steerDifference;

```