```
OV = throttle;      //currently throttle referenced, need to get in speed referenced??
IV = (Ri/(Ri+Lr))*OV;

#if DEBUG
  Serial.print("OV = ");
  Serial.print(OV);
  Serial.print(".....IV = ");
  Serial.println(IV);
#endif

idealDiff = ((OV - IV)/OV);

#if DEBUG
  Serial.print("Weighted difference of velocities = ");
  Serial.println(idealDiff);
#endif

// INSERT PI CONTROL
error = idealDiff - rpmDifference;

#if DEBUG
  Serial.print("Error (calculated)");
  Serial.println(error);
#endif

dT = loopEnd - loopStart;
dT = dT/(1000*1000);
//dT = 1;
control = (Kp*error)+(Ki*(((error+errorPrev)/2)*dT+controlPrev))+(Kd*((error-errorPrev)/dT));

#if DEBUG
  Serial.print("deltaTime = ");
  Serial.println(dT);
  Serial.print("Control (calculated) = ");
  Serial.println(control);
#endif

controlApplied = control;

if(steerDifference < leftSteerBuffer){
  throttle_in_right = throttle;
  throttle_in_left = throttle - control; // plus or minus control???
} else if(steerDifference > rightSteerBuffer){
  throttle_in_right = throttle - control; // plus or minus control???
  throttle_in_left = throttle;
} else {
  throttle_in_right = throttle;
  throttle_in_left = throttle;
}

#if DEBUG
  Serial.print("Throttle (right calculated) = ");
  Serial.println(throttle_in_right);
  Serial.print("Throttle (left calculated) = ");
  Serial.println(throttle_in_left);
#endif

errorPrev = error;
controlPrev = control;
steerLast = steerDifference;
```