

AIM SOLO data review:

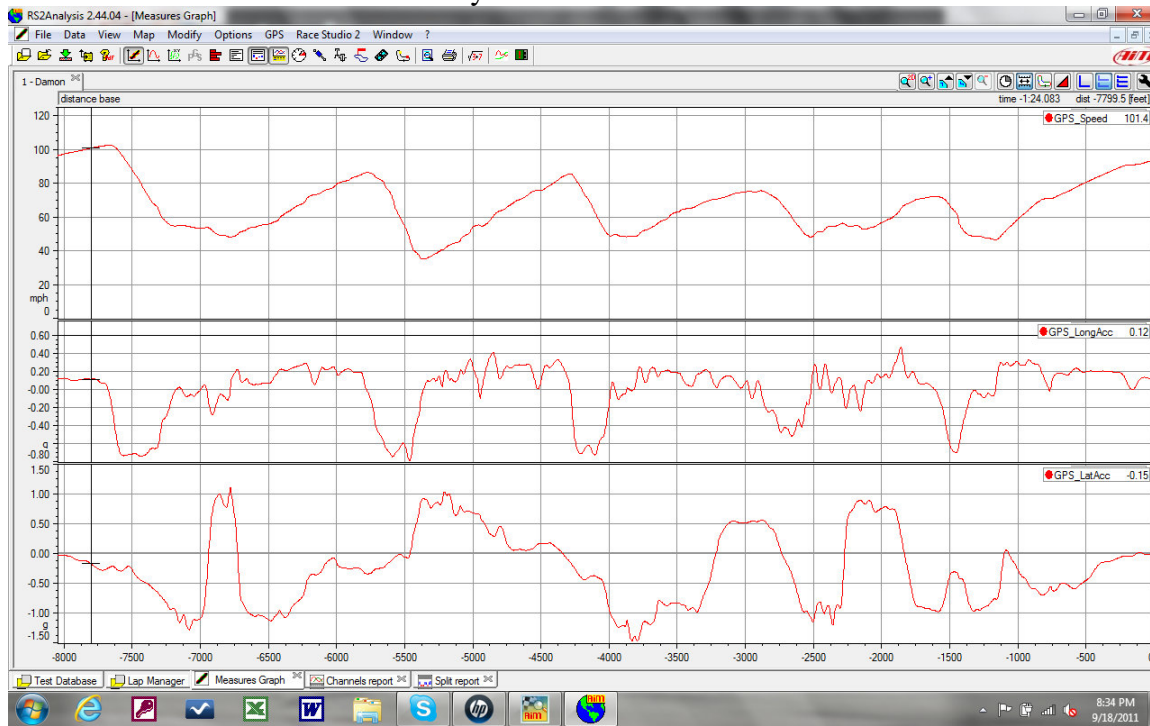
Disclaimer: The following are my thoughts about data from the new AIM SOLO unit. I am not suggesting that anyone go to the track and drive harder that they have done in the past. It is the driver's responsibility to assess their limits as well as the limits of their car.

Evaluating driving data, I like to look at Speed, Brake/throttle (GPS LongAcc), and GPS LatAcc

I set the scale so the graph fills most of the area (see my Power point document called AIM Data Analysis)

The first step is to look at the **fastest lap** in the session

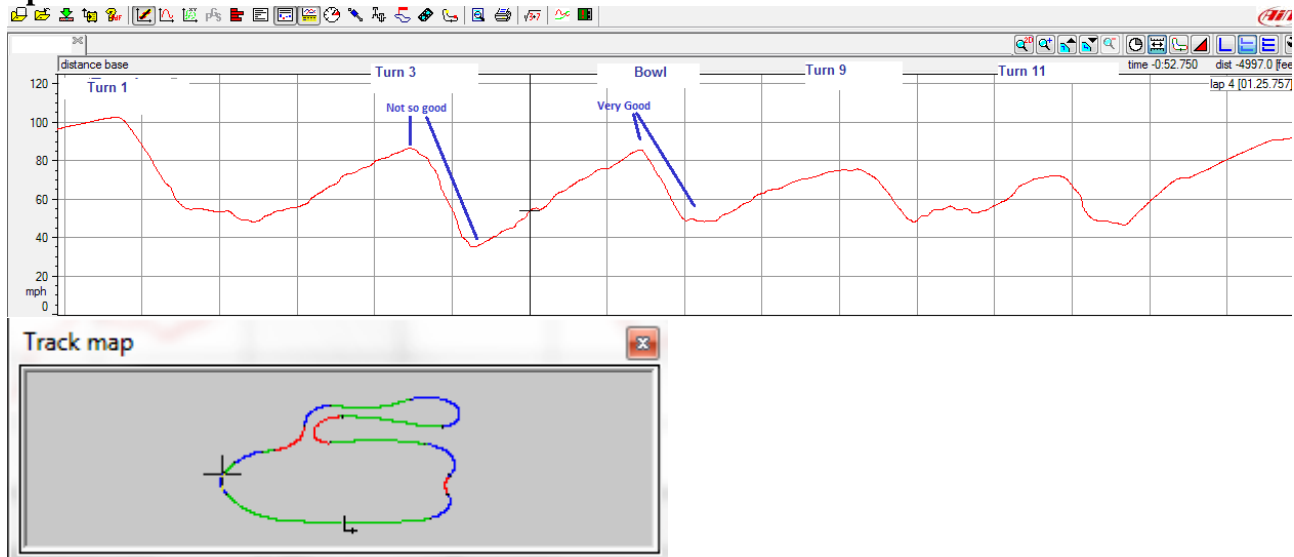
The raw data looks like Greek until you know what to look for.



Let's discuss the speed graph first:

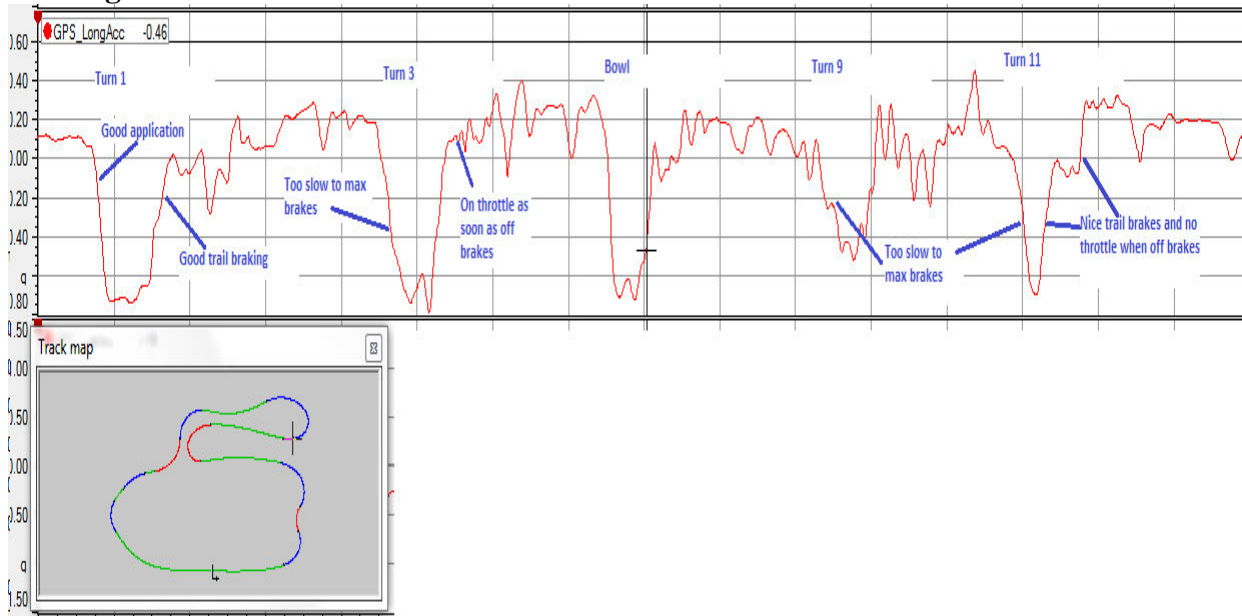
First, we'll look at one lap, and then we'll look at multiple laps. I like to look at the speed changes at the start of brake application and the speed at the apex (minimum speed in the corner).

Speed:



I look for a fairly sharp drop off of speed entering a hard brake zone. If it is a sharp corner, then the driver has made a quick transition from full throttle to hard braking. In this example, the first transition at turn 1 is excellent. The second, at turn 3, is rounded, which means that the driver rolled off the throttle and applied the brakes more slowly (don't beat yourself up if you see it until you look at multiple laps to see if it is a traffic issue or a habit. I'll show multiple laps later). Next, I look at the graph of speed near the apex (slowest part of the corner). If the transition is a sharp corner, then the driver is probably braking too much and going to the throttle as soon as he/she gets off the brake, probably before the apex. You should be rolling off the brake and scrubbing speed due to turning or moderate trail braking. In the graph above, the transition at turn one is great, but at turn 3, the speed has sharp corner so the driver went to the throttle as soon as they got off the brakes. The throttle and brakes look excellent entering the bowl.

Now lets look at the Longitudinal G (GPS LongAcc): Braking and Throttle:



The LongAcc represents brake and throttle. Numbers below zero are brakes. Above zero is throttle.

This correlates with what the speed graph showed.

Turn 1: Nice transition from throttle to brakes. You can see that the brakes started from +0.1 G meaning the car was at strong throttle and the brakes were applied fairly quickly to max. Coming off the brakes shows more slope so it is trailing off. In addition, you can see that the G is at zero (more or less) after the brakes are off.

Turn 3: Transition from throttle to brakes is good but brakes are applied too slowly (thus applied to early). In addition, there are two max peaks, which means that the brakes were applied then released, then reapplied, which is not good if it is a habit, but more laps need to be looked at to see if it is traffic or a habit. You also can see the throttle was applied as soon as the brakes were released.

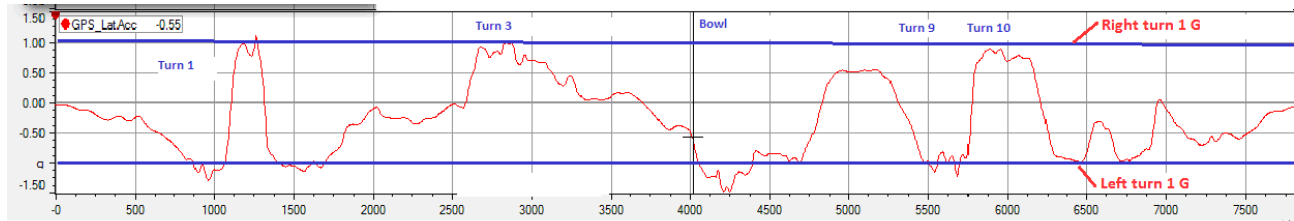
Turn 9 and 11 look like the brakes are applied too slowly (which means too early). Turn 9 goes to the throttle as soon as the brakes are released. Better transition to throttle in turn 11.

Lastly, lets look at Latitudinal G in the corners:

Now lets look at the Lateral G (GPS_LatAcc):

Tire Grip:

Much of this is dependant on the track surface, car set up and the tires. Typically, street tires can not reach 1 G, Hoosier R6 tires are good up to 1.4 G and Michelins slicks good to 1.6 G. This varies by track and car, but if you are on good R 6's and getting 0.8 G's you probably have room to push harder. **Disclaimer: It is up to you to safely search for tire and car limits!**

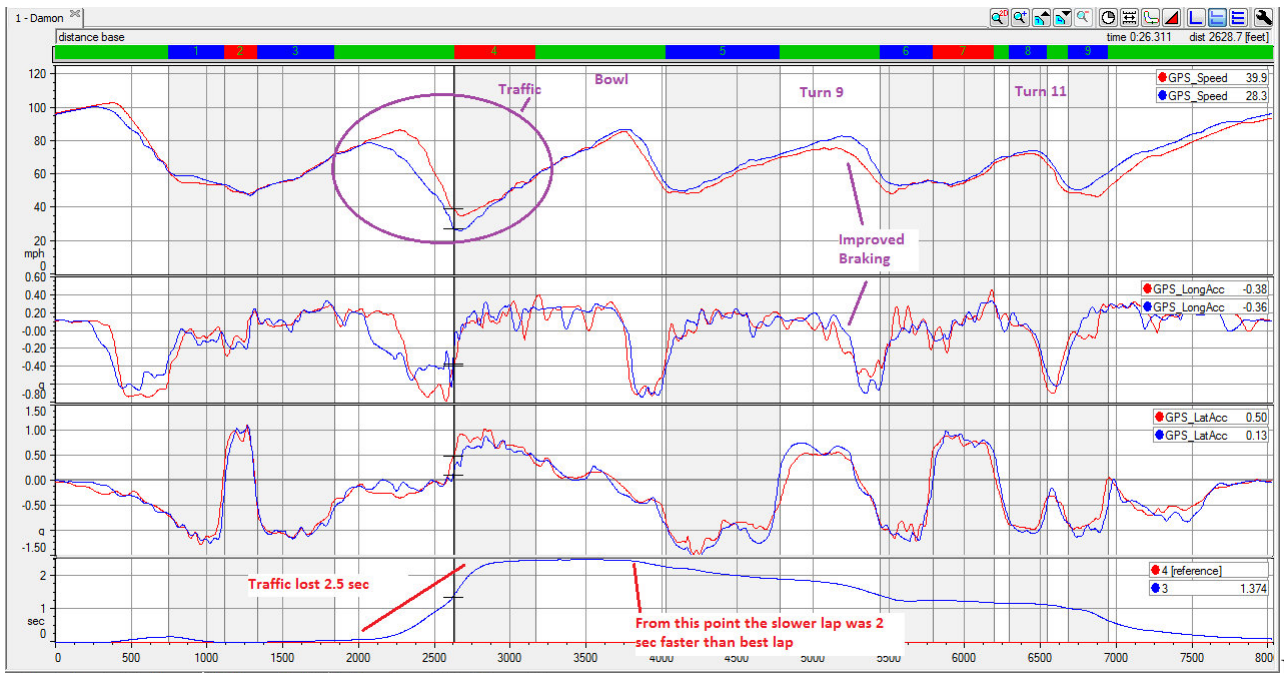


I've highlighted 1 G for both left and right turns. You can see 1.5 G's in the bowl, which is understandable if you've driven this track on grippy tires. I'd use this chart as a comparison to other runs to see if you are making progress. There is more to learn from LatAcc but not for us at this point.

NOW, let's compare the fastest lap to another lap in the same session:

Below is the same graph as we started with except it has a second lap over laid on to the graph. In addition, AIM shows the loss or gain from the fastest lap (see the bottom of the graph).

In this case, the red lap is a 1:25.757 and the blue lap is 1:25.891. The first thing I see is that traffic slowed the blue lap almost 2.5 sec. entering turn 3. The significant thing to observe is that the blue lap was almost 2.5 sec faster from turn 3 to the end of the lap. This gain was made by later braking in the bowl and then getting to the throttle earlier on exit. The next big gain was at turn 9. Referring back to the notes on the first lap, remember that I pointed out that the brakes were applied too slowly. Look at the blue lap, LongAcc and you can see a much faster (thus later) transition to full brakes. Just this alone gained 0.6 sec on the fastest lap. The next big improvement was at turn 11. This is the same as turn 9. The blue lap is faster to the max brakes. In this case “max brakes” is less than before and it was released earlier, in other words too much braking was applied in the red lap. Another significant change is that the driver went to the throttle earlier and carried more speed all the way down the front straight. On my earlier note in this corner I thought that waiting to go to the throttle was good. This lap proved that the first lap waited too long to go to the throttle. This is why you need to look at multiple laps. It is a delicate balance to between brakes and throttle, which is why you need data if you are trying to improve.



In Summary, you can learn a lot by comparing your own laps. Slower laps often have parts of the track better than the fastest laps and you need to learn from that. This will give you confidence because the data has shown that you can do it, you just need to put all the best sections together repeat it over and over. Set your target to become consistent with your lap times before you push yourself to go faster!

After you get comfortable with looking at data, you can compare your best lap with another driver's lap. That will add another dimension to this whole learning process.

Be safe, learn cautiously and enjoy the whole experience!