AV Production Analysis Test – Dotan Sadka

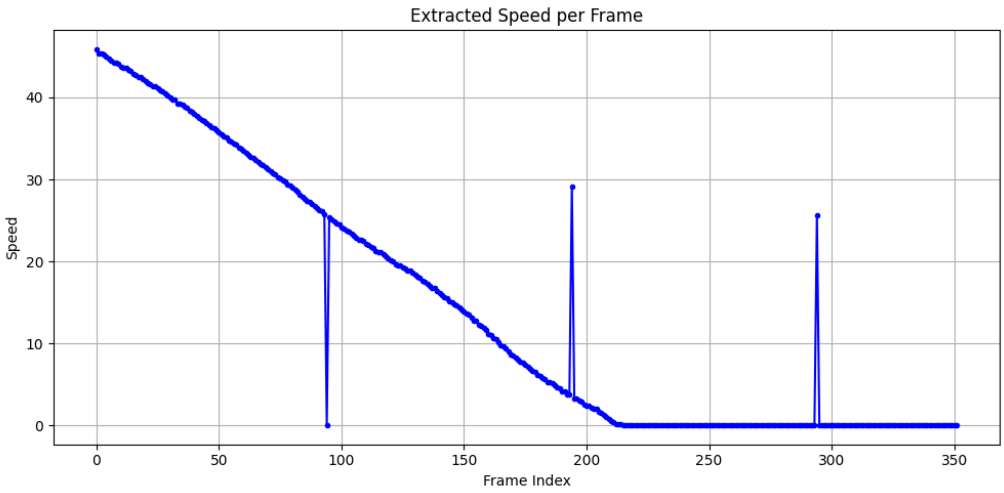
Part 1 – Data:

For this part, I copied the data into an Excel table, applied filters to each column, and used the automatic count feature in Excel while filtering to answer the questions:

1) **Ringo** – He doesn't report Minor issues at all.
2) **Urban roads** – Having most issues (862), and most critical issues (244) especially.
3) **Italy** – Even though all countries have a similar total number of reported issues, Italy has the highest count of Critical + Major + Medium issues combined (368). When focusing only on Critical and Major issues, Italy reports nearly double the amount compared to other countries, indicating significantly worse performance.
4) **Dusk** – It has the lowest rate of issues reported (251), compared to Night (993) and Day (995).

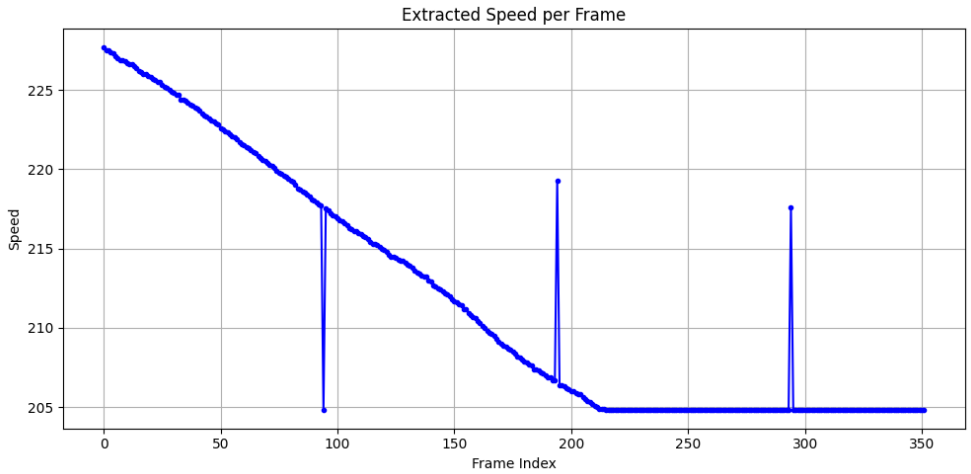
Part 2 – Parser:

1) The speed sensor issue is that at frames 95, 195, and 295, there are sudden spikes in the data that do not match the overall trend. These peaks likely represent incorrect readings, as the general pattern shows the speed gradually decreasing from 45.9 to 0.
   (I added extracted_speeds.csv where I can see the exact indexes and their speed).



   I interpreted the phrase *"from the 9th bit to the 20th (including)"* as using **1-based indexing**—meaning the first bit is index 1, not 0. This interpretation results in

more realistic speed values (speeds gradually decreasing from 45.9 to 0), which match the expected behavior of the sensor.
However, to be thorough, I also included a second graph using **0-based indexing**, where the extracted speeds are significantly higher. This helps demonstrate why the 1-based indexing interpretation appears to be more accurate in this context.



2) The wrong FCS is in line 35, the line I copied here:
7E 40 51 00 89 71 04 10 CC FD 1F 00 3A 01 00 00 00 00 00 00 4D 7E
The result of the calculation returns 3D, where the coded FCS ↑ is 4D
(in decimal it is 61 instead of 77).
To find it, I created a csv file (fcs_validation_results.csv) where I compare all the calculation of FCS vs. The coded FCS, I can clearly see that line 35 (starting from index = 1) is the only FALSE result comparing FCS and the calculation 0XFF - Sum(header and data bytes)%0X100.