

stats_b17.csv

스프레드시트

According to this dataset, does spin frequency meaningfully react to changes of loss rate and delay(latency) and show some statistical relationship?



The dataset includes the following columns:

- `lossRate` : The rate of packet loss.
- `bandwidth` : The bandwidth available for the connection.
- `delay` : The delay (latency) in the connection.
- `spinFreq` : The frequency of spin bit toggling.
- `avgThroughput` : The average throughput of the connection.
- `numLosses` : The number of packet losses.

To assess whether spin frequency meaningfully reacts to changes in loss rate and delay (latency) and shows a statistical relationship, we can calculate correlations between `spinFreq` and both `lossRate` and `delay`. Let's analyze these relationships. [\[-\]](#)

The correlation analysis reveals the following relationships between spin frequency (`spinFreq`), loss rate (`lossRate`), and delay (`delay`):

- Spin frequency vs. loss rate:** A moderate positive correlation (0.285), suggesting that as the loss rate increases, the spin frequency tends to increase, but the relationship is not very strong.
- Spin frequency vs. delay:** A stronger negative correlation (−0.616), indicating that as delay (latency) increases, the spin frequency tends to decrease, showing a meaningful statistical relationship.

In summary, spin frequency appears to react more strongly to changes in delay (latency) than to loss rate, with a significant negative relationship with delay. [\[-\]](#)

Then, when the dataset is splitted into two environments: loss-dominated in which loss rate is high and delay is relatively low, and delay-dominated in which loss rate is low and delay is high, can we distinguish them by only referencing spin frequency value?



To determine if we can distinguish between loss-dominated and delay-dominated environments based solely on spin frequency, we will:

- Define the two environments:**
 - Loss-dominated:** High loss rate and relatively low delay.
 - Delay-dominated:** Low loss rate and relatively high delay.
- Split the dataset** into these two categories.
- Compare the spin frequency** distributions between the two environments to see if the values differ significantly.

Let's define thresholds for "high" and "low" for loss rate and delay, split the dataset, and then analyze the spin frequency values.

The spin frequency distributions in the two environments show notable differences:

- Loss-dominated environment:**
 - Mean spin frequency: 15.19
 - Standard deviation: 12.51
 - Range: 5.04 to 67.43
- Delay-dominated environment:**
 - Mean spin frequency: 2.89
 - Standard deviation: 1.15
 - Range: 0.18 to 4.84

These statistics indicate that spin frequency values are significantly higher and more variable in the loss-dominated environment compared to the delay-dominated one, where the values are much lower and more consistent. Based on this distinction, it is possible to differentiate between the two environments by referencing the spin frequency values. [\[-\]](#)

stats_b171d1l.csv

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Take this dataset into account. This is is the same dataset with the previous one except loss rate 0 and delay 0 datas are removed. Re-evaluate the relationship between loss rate, delay and spin frequency



It seems like I can't do more advanced data analysis right now. Please try again later by uploading the dataset again, and I'll be able to assist you with the re-evaluation of the relationship between loss rate, delay, and spin frequency. [\[-\]](#)

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