Jeremiah Kellam

CSD380 Module 7.1 Discussion

7/17/2024

What can be explained by a non-Gaussian distribution? Can the distribution still be used?

Hello,

For the Module 7 discussion I will be covering the main topic of non-Gaussian Distribution and when it may be applied. It was very hard to find something about using non-Gaussian data. Most articles only explained how to normalize data for using in analysis. Amanatullah wrote a very comprehensive article on medium.com about how to do just that.

Non-Gaussian distribution is a class of probability that deviates from symmetrical and bell-shaped patterns. Instead, the distribution may have different shapes like tails, being skewed, or have kurtosis (Amanatullah). “Skewness and kurtosis are both measures used to characterize the shape of a distribution in statistics, but they focus on different aspects. Skewness quantifies the asymmetry of a distribution while Kurtosis describes the shape of a distribution, particularly focusing on the tails.” (GeeksforGeeks). These definitions may not mean much in conversation, but its simple to say it is anything that is not a bell curve.

Non-Gaussian distribution can be used to analyze date that doesn’t conform to the norm and show real-world cases like financial returns, rainfall, failure rates, medical tests, and others (Amanatullah). The application of these real-world phenomena can have applications in stock returns and market volatility, (software) engineering results to analyze failure rates and time to failure, and social sciences looking at income distribution and population growth (Amanatullah).

So, the take-away that I see is that non-Gaussian distribution can help in the software development lifecycle by looking at failure rates and where / when they occur in a build. Hope you enjoyed.

Thank you for your time,

Jeremiah K.

Reference(s):

Amanatullah. (2023, June 14). When normal just won’t cut it: understanding and utilizing non-Gaussian distributions. Medium. <https://medium.com/@amanatulla1606/when-normal-just-wont-cut-it-understanding-and-utilizing-non-gaussian-distributions-9fb0d8e249a3>

GeeksforGeeks. (2024a, May 17). Difference between skewness and kurtosis. GeeksforGeeks. <https://www.geeksforgeeks.org/difference-between-skewness-and-kurtosis/>