

Bio mathematical Analysis on Impedance Measurement during COVID-19 Pandemic

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Abstract

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We can use `smooth` to verify smooth (y, span). The following figure shows the result of data (Figure 1).

Digital sine fitting

We can draw the following discrete curve by inputting the following commands in the command line window

```
>> N = 0: 100;
>> X = 2 * (2 * pi * N ./25 + pi/4) + 3;
>> Y = sin(X);
```

(Figure 2, 3)

If each point of the above discrete curve is defined by

$$y_i = (x_i + 3) \sin(x_i)$$

Since the known curve is drawn, the above parameters can be easily obtained, and the error of each point is 0. However, for a relatively disordered sequence, there will always be a certain deviation from the ideal curve, so the error will not be 0, but our purpose is to find a curve that is closest to it, and the evaluation standard is the sum of squares of errors, which is consistent with the least square method (Figure 4-6).

Similarly, we use the following expression

$$y_i = (x_i + 3) \sin(x_i) + \epsilon_i$$

For subsequent operation processing, another form is used to express

$$y_i = (x_i + 3) \sin(x_i) + \epsilon_i$$

sources of air pollutants, but there is room for improvement in the current models. By incorporating time series data or advanced models, a clearer picture of the behavior of pollutants can be obtained. Although TRA is primarily used for PM, it can also be applied to other pollutants such as carbon black, ozone, and ammonium sulfate. More research is needed in regions outside of Europe, the US, and the Arctic, such as Latin America, Africa, and Asia.

CA and PCA are more commonly used techniques and have been applied in various ways in previous studies. This literature review aims to scrutinize and analyze a wide range of research studies that investigate the connection among meteorological parameters and pollutants. By combining TRA, CA, and PCA, a more comprehensive recognizing of the correlation between meteorological variables, emission sources and air pollutants can be obtained. Using TRA to determine emission sources, CA to group cities based on weather patterns and pollutant behavior, and PCA to quantify the relationships between variables, a spatial model between cities can be created. This review is a novel examination of studies that employs PRISMA guidelines in the analysis of meteorological variables and air pollutants, utilizing CA, PCA and TRA.

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Conflict of Interest

We have no conflict of interests to disclose and the manuscript has been read and approved by all named authors.

References

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