Statistical Equations

A guide by E. Walker (2022)

Below is a tabulated overview of central equations utilized in statistics. Each entry comprises of a full equation, and a summary.

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| Equation | Explanation |
|  | A linear regressive model used to simulate phenomena which exhibit a linear relationship. occurs as a linear model which considers input variables from the environment (). Similar to , these models comprise of a constant y-intercept (), but one gradient for *each* environment variable (). This formula takes into consideration environment variables, and “dummy variables” – which are numeric representations of categorical data. |
|  | As polynomial regressive model used to simulate phenomena which exhibit a polynomial relationship. A quadratic regressive model would be an expression of degree , trinomial , etc. A standard linear regressive model would be degree . This formula considers environment variables. |
|  | Arithmetic mean of a collection of values. |
|  | Reductible error, given by the difference between the actual environmental response and our model . |
|  | Min-max normalization to ensure that all values within a collection reside in the same range/neighborhood of values between , , or an arbitrary range . |
|  | Mean scaling. Including the *standardization* variant which divides by the set’s standard deviation . |