Regresi isotonik mulus = Smooth isotonic regression

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Abstrak

[ABSTRAK
Analisis regresi merupakan salah satu metode yang paling sering digunakan dalam menganalisis data. Pada aplikasinya, seringkali proses analisis dihadapkan dengan masalah keterurutan. Pada tahun 1972 Richard E. Barlow memperkenalkan metode Regresi Isotonik sebagai salah satu metode analisis data yang mempertimbangkan keterurutan. Metode regresi ini digunakan ketika penelitian berhadapan dengan asumsi bahwa ketika nilai variabel independen bertambah, maka nilai variabel dependen juga bertambah. Dengan adanya asumsi ini, maka digunakan fungsi isotonik, yaitu fungsi yang mempertahankan keterurutan naik, untuk menemukan model yang sesuai. Tujuan dari metode Regresi Isotonik adalah menemukan fungsi g* yang merupakan anggota kelas fungsi isotonik dan memiliki jarak kuadrat minimum terhadap fungsi yang diperoleh dari data pengamatan. Dengan menggunakan prinsip dasar Cumulative Sum Diagram dan Greatest Convex Minorant, g* bisa diperoleh, dimana g* adalah fungsi tangga. Seiring berkembangnya teori pendekatan, interpolasi polinomial juga semakin berkembang dan bisa digunakan untuk smoothing fungsi tangga yang diperoleh dari metode Regresi Isotonik. Fungsi hasil smoothing ini dinamakan Smooth Isotonic Regression. Dalam skripsi ini akan dibahas bagaimana cara memodelkan hubungan antara dua variabel menggunakan metode Regresi Isotonik dan Smooth Isotonic Regression.
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ABSTRACT
Regression analysis is a method in statistics that often used to analyze data. On the application in real world problem, the analysis process is often confronted an order restriction. In 1972, Richard E. Barlow introduced a method named Isotonic Regression as a method that concerns on the order restriction. This method is used when the analysis confront an assumption that the dependent variable value will increase as the independent variable value increase. With this assumption, the regression model is constructed from isotonic function that preserves the order of the variable. The objective of this method is to find a function g* that has minimum distance to the observation data function and g* is element of class of isotonic function . Using the Cumulative Sum Diagram and Greatest Convex Minorant, appropriate g* can be found and g* is a step function. Polynomial interpolation as the development of approximation theory can be used as a smoothing function to the step function from isotonic regression. This smooth function named Smooth Isotonic Regression. In this paper, these two methods will be explained.;Regression analysis is a method in statistics that often used to analyze data. On the application in real world problem, the analysis process is often confronted an order restriction. In 1972, Richard E. Barlow introduced a method named Isotonic Regression as a method that concerns on the order restriction. This method is used when the analysis confront an assumption that the dependent variable value will increase as the independent variable value increase. With this assumption, the regression model is constructed from isotonic function that preserves the order of the variable. The objective of this method is to find a function g* that has minimum distance to the observation

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